

Two Sections—Section One



Railway Age

AND RAILWAY REVIEW

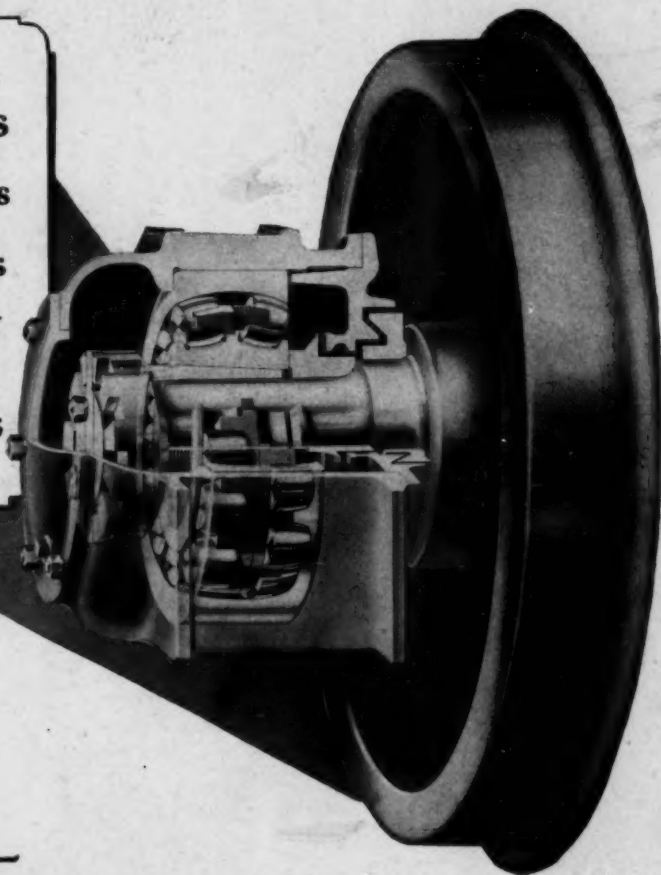
FIRST HALF OF 1928—No. 8

FEBRUARY 25, 1928

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Railway Age

Vol. 84

February 25, 1928

No. 8



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Railway Age

Vol. 84, No. 8

February 25, 1928

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A New Mississippi River Bridge

THE construction of a combined highway and railway bridge over the Mississippi river by the Vicksburg Bridge & Terminal Company, which was recently awarded contracts for both substructure and superstructure, will mark the first advance in bridging the southern reaches of this stream since the completion of the St. Louis-San Francisco crossing at Memphis in 1892. Like many other bridge projects undertaken during the past three years under the stimulus of a growing volume of highway traffic the new structure at Vicksburg will be a toll bridge. But successful financing in this case was facilitated by the fact that the railway track on this bridge is to be used under lease by the trains of a subsidiary of the Illinois Central, the Vicksburg, Shreveport & Pacific, which now cross the river via ferry. The use of the bridge should therefore cut nearly an hour from the schedules of trains operating between Shreveport and the north and east via connections with the Yazoo and the Mississippi Valley line of the Illinois Central at Vicksburg, and the Southern at Meridian, Miss.

Gaining Public Recognition for Passenger Service Improvements

THE railroads are continuing to increase the refinements which they offer to passengers. Further speeding up of services to the Pacific coast have been announced. The Southern Pacific is preparing plans for opening up considerable areas of land near many of its stations where patrons may park their automobiles during train trips. There can be no doubt that such a facility will be appreciated by many, and that it should result in utilization of trains by some who might otherwise drive their automobiles all the way. An eastern road in advertising a cheap excursion, in addition to announcing a low rate available only for coach passengers, is providing another form of ticket at a slightly higher price which will permit the holder to purchase Pullman space. Dining car service continues to improve—with more attractive meals and lower prices. And yet the passenger traffic problem is not solved. The work of improvement must go on and, what is just as important, the attention of the public needs to be continually and emphatically directed to the improvement which has been made. Public recognition of accomplishments in this field has not been commensurate with their merit. But are railroad men themselves always fully alert to their opportunities to tell public gatherings and their business friends about modern railroad passenger service? The public has generally a fair appreciation of the improvements made in freight service since the war. When will it similarly acclaim the spectacular improvements in passenger service?

Battery-Oil-Electric Locomotives

A NEW locomotive being tried for use on the west side lines of the New York Central in New York City, is known popularly although somewhat incorrectly, as the amphibian. It cannot swim the river but it can receive power from a Diesel engine in combination with a storage battery, from the battery alone, from a third rail, or from an overhead trolley. All of the New York Central electrified lines in New York City use direct current at 600-volts, obtained from a third rail, but it does not appear feasible to equip the west side yard below 60th Street with either third rail or overhead contact system. An overhead wire can be used to advantage above 60th Street and will be installed. The new locomotive involves some complication of control apparatus, but takes full advantage of the different kinds of apparatus with which it is equipped. The 300-hp. oil engine which runs at a fixed speed is an efficient unit which has been proved dependable. It is not large enough to supply the peak load requirements of switching but the battery will take care of them. Periodic drains from the battery can be replaced by charging the battery from the engine driven generator at times when the locomotive requires less than 300-hp. for operation. Straight battery operation can be used in warehouses and advantages afforded by abundant power can be had when the locomotive is in territory equipped with overhead wire or third rail. It has not been in service long enough to determine whether or not it can meet all of the requirements of the west side yards but it has evident potentialities. Such a locomotive may not find wide application but it would appear that it is admirably suited to meet switching requirements in localities where the steam locomotive is looked upon with disfavor.

Persistence Rewarded

THE value of setting definite goals of achievement in railway operation and then keeping everlastingly on the job in an effort to reach these goals has been amply demonstrated on the Kansas City Southern. By a concerted effort of forces throughout the system, striking results have been secured in fuel conservation, safety, reduction of engine failures and decrease in hot boxes, to mention only four items. It would be difficult to evaluate the benefits accruing to both the railway and the employees from these campaigns. In safety work, for example, the splendid record of 68,997 man-hours per reportable injury was made during 1927 by the track department, with 8 out of 18 units exceeding the goal of 100,000 man-hours or engine-miles per injury, set for the year. How much this has meant in improved operation and better working conditions can be readily appreciated. Another example of accomplishment is afforded by the record of the mechanical de-

partment in reducing hot boxes. Experience shows that the number of miles per hot box usually increases during the summer and fall months, with a noticeable decrease during December, January and February. By specializing on hot box preventive measures, the Kansas City Southern was able to improve its performance in this respect from an average of 73,989 miles per hot box in 1926 to 80,569 miles in 1927, the goal of 100,000 miles per hot box being exceeded in the month of November. For 1928, the goal of 105,000 miles per hot box has been set. Thus the standard of performance in this respect is constantly being raised, with train movement over the road correspondingly expedited and operating costs decreased. The statement is sometimes made that railway men and others are "campaigning to death" and it is doubtless true that almost constant drives are being made for one cause or another. Interest in any subject, no matter how worthy it may be, cannot be sustained, however, unless concerted, persistent and intelligent effort is made to keep it before those interested, not for one week or one month but during the entire year. Evidence has been afforded time and again that this sort of effort pays.

Preference to the Train Under Adverse Conditions

WHERE branch line trains interfere with main line traffic in the vicinity of junctions and terminals, the delays incident to the use of time table rights and written train orders can frequently be eliminated by directing all train movements by signal indications. This is especially true where certain trains should be given preference because of adverse grades and time table rights and where train orders are not flexible enough to permit changes to be made so quickly as to keep the right train moving. This condition was particularly true on a five-mile section of single track on the Missouri-Kansas-Texas between Muskogee, Okla., and Wybark. The use of signal indications to direct all train movements in this territory has eliminated serious delays, saved fuel, and reduced penalty overtime of road crews. The results obtained by this method of operation are described in an article elsewhere in this issue. The same idea can no doubt be applied successfully on other roads. The most interesting feature is that the investment for new equipment is comparatively small. The installation of the M-K-T pays over 100 per cent per year on the investment.

Pooling Passenger Service

ONE of the provisions of the original act to regulate commerce made it unlawful for carriers to pool or divide among themselves any portion of their gross or net earnings. While this provision was intended only to prevent harmful financial juggling, it also had the effect of preventing the railways from pooling their service. This provision was amended in 1920, to permit the carriers to pool their service or earnings if the Interstate Commerce Commission felt that it was in the interest of better service to the public or effected operating economies. It is true that, with the ban removed, so far few railroads have taken advantage of this opportunity to effect economies. Many joint facility arrangements exist throughout the country whereby duplication of fixed improvements or of switching, with the attendant carrying, maintenance and operating costs, are avoided. There is no essential difference between pooling facilities and pooling train service and it would

seem that more of the latter should be done. Elsewhere in this issue, the general auditor of the Northern Pacific describes how his road, with the Union Pacific and the Great Northern, consolidated train service between Portland and Seattle, and also how the Northern Pacific, the Great Northern, and the Soo Line devised a similar arrangement between St. Paul-Minneapolis and Duluth-Superior. The savings effected are large and indicate that a spread of the practice elsewhere would react similarly to the benefit of the railways concerned. These are impelling reasons why such steps should be taken, as more and more hard-surface highways are being built, paralleling the railways. Finally, and most important, it should not be overlooked that the saving effected from one of the pools alone, referred to in the article, is somewhat more than half a million dollars a year.

The Elusive Operating Ratio

IN comparing the operation of different railroads, it has long been the custom to regard differences in operating ratios as highly significant. The inference commonly drawn in such cases has been that the road with the lowest operating ratio was the one on which operating efficiency had been most highly developed.

The fact that such comparisons are misleading and unsound in many instances is now being more generally realized. To discover wherein the fallacy lies, it is only necessary to analyze the component figures, which, through a series of calculations, eventually produce the statistical factor known as the "operating ratio." These figures comprise operating revenues and the various elements of operating expenses. Operating revenues fluctuate and operating expenses do likewise, within a narrower range. The operating ratio, then, is the product of two unstable factors, varying with individual railroads, even in the same part of the country.

Manifestly, it is quite possible for a favorably situated railroad, having little or no difficulty in obtaining a large volume of traffic, to be extravagant in the matter of operating expenses and yet produce an operating ratio that will compare favorably with those of other roads less fortunately situated. The road with the higher operating ratio may quite conceivably be operating with maximum efficiency, and yet, by reason of serving a section of light traffic density, subject to seasonal or other disturbances, its showing may be completely overshadowed by another less efficient but more favorably situated line.

Of course, there is a minimum in operating expenses below which it is impossible to go and still operate safely and satisfactorily, but operating expenses do not by any means increase proportionately with an increase in traffic handled. Twice as much business can be moved readily at much less than twice the operating expense.

With all of its shortcomings the operating ratio is of real value to bankers and other investors in railway securities, for since their chief concern is with the money earned, they may take the operating ratio at its face value. Regardless of how the results are produced, the operating ratio does indicate unmistakably the difference between income and expenditures, and the amounts available for the owners.

Another use to which the operating ratio can be put with some advantage is as a means of comparing the results on the same road for different periods. Even then, however, the comparisons may be misleading by reason of changes in expenses without corresponding

changes in rates, such, for example, as the increases in wages that have become effective during the past year.

From the standpoint of the railroad man, it is clear that there is need for some index other than the operating ratio that will give due weight to those important and controlling factors which now serve merely to distort comparisons. The present basis is manifestly unjust and productive of mistaken conclusions. The ideal basis of comparison is still undiscovered, however, and, with all the conflicting elements entering into the situation, it is not apparent that any one will be sufficiently ingenious to work out a satisfactory solution. In the meanwhile, care should be taken to avoid the pitfalls arising from false conclusions drawn from comparative operating ratios.

The Work of the Average Railway

IN dealing with railway traffic figures running into the hundreds of millions and billions, it is difficult to appreciate the amount of work which is performed by the average unit of the railway plant. The following figures have, therefore, been prepared to show the average daily operation on each mile of railway line.

Seven passenger trains and seven freight trains moved over the average mile of railway line in the United States each day last year. In these seven freight trains were 325 freight cars, of which 205 were loaded and 120 empty. In the loaded cars was freight weighing, roughly, 5,600 tons, while the total weight of the freight trains passing over this mile of line, including locomotives, cars and contents was 14,400 tons. The seven daily passenger trains which ran over this average mile included 46 passenger train cars and carried a total of 416 passengers.

The daily gross revenue earned by this average mile of railway line amounted to \$72. The average direct operating expenses consumed 74 per cent of these total earnings, or \$53 daily. Next, a total of \$4 a day was paid by this average mile to local, state and national tax collectors. After the payment of certain other expenses, including rental charges for equipment and facilities belonging to others, the average daily net earnings of this typical mile of railway line amounted to \$13. This daily average net earning figure of \$13 amounted in a year to a return of approximately 4.5 per cent on the average railway property investment per mile.

Railway Officers and Public Relations

SOME time ago an engineering society in an important industrial center held a two-day special meeting of more than ordinary importance, to which a considerable number of prominent engineers were attracted from throughout the country. Two leaders in the railroad field had prominent places on the program. The local engineers were greatly pleased with the success of the program and the large attendance at all of the sessions. One fact, however, was extremely noticeable and that was that in spite of the large number of engineers associated with the technical departments of the railroads having headquarters in the city, or in the near vicinity, hardly any of these men attended the meetings or backed up by their presence the two railroad officers on the program. One observer suggested that the performance was characteristic, because the technical men on the railroads are inclined to be more or less clannish

and do not bother to show any very great interest in the welfare of engineering societies, local or national.

These facts are cited for what they may be worth. Obviously, in these days when railroad managements have so keen an appreciation for cultivating the good opinion and a sympathetic attitude on the part of the public, it behooves railroad officers in every department to do what they can to help make the right sort of impression upon the public. In the case in question the calibre of the men who were interested in putting over the program, and the interests that they represented, were such that it would seem that an unusual effort could well have been made to insure a spirit of cordial co-operation on the part of the technical men holding official positions with the railroads, particularly since some of the latter were men of national reputation. Is it a fact, as was suggested by one railroad executive, that "It is to be feared that some of the technical men on the railroads do not have an adequate conception of their responsibility for helping to develop the best possible relations between the carriers and the public?"

The New Haven Declares a Dividend

ON April 10 the New Haven will pay to the owners of its common stock a "special dividend" of one per cent. This will be the first dividend that the owners of this stock will have received for 14 years. It is not, however, the first dividend that the company has paid in this period, since on January 2 there was paid the initial quarterly dividend on the new 7 per cent cumulative preferred stock which was issued last year, the proceeds applied to the refunding of part of the indebtedness owing to the government. The payment of the common dividend cannot, with propriety, be regarded as marking the culmination of the New Haven's recovery.

It is, rather, merely one more step—withal a most important one—which the present management has been able to take in the direction of the restoration of the credit standing which was characteristic of this property prior to that time when the excessive ambition of the Mellon regime led to disaster and misfortune. The common dividend payment is called a special one and the directors were careful to give no indication of their future policies with reference to dividends. Culmination of recovery will be attained when announcement can be made that the dividend has been put on a regular basis, which announcement, one trusts, the railroad will be able to make in the not too distant future.

The New Haven officers must find considerable gratification in the fact that only as recently as 1923 there was fear that the company could not avoid receivership. For a time in that year the common stock could have been bought for as low as nine or ten dollars a share.

The road has come through a reorganization without recourse to the courts. It has done so by making its peace with its harshest creditor, Uncle Sam.

Less than six months ago the New Haven was still indebted to the federal government for \$87,000,000, on which it was paying 6 per cent interest. In the short space of less than half a year it has paid off or refunded this entire indebtedness, slightly more than half by means of the sale to its common stockholders of an issue of 7 per cent cumulative preferred stock and the remainder by the substitution of indebtedness owing to the investing public at much lower rates of interest than the government found it necessary to exact.



The Locomotive Shop—Erecting Bay in the Foreground

New Shop Facilities Embody Many Distinctive Features

Layout of Florida East Coast plant at St Augustine based on careful study of requirements

IMMEDIATELY to the west of the main line of the Florida East Coast at the northern limits of St. Augustine, Fla., lies the new general repair plant for the maintenance of locomotives and cars. This plant, located less than an hour's run from the northern terminus of the road at Jacksonville, has been built to replace the old shops at St. Augustine, which became inadequate and expensive to operate due to lack of facilities for handling the modern power and rolling stock with which the road is now equipped, and which were not susceptible of modernization because of the physical limitations of the property upon which they were situated. The new facilities are unique in the architectural treatment they have received which gives them an appearance decidedly in contrast with the average buildings for this purpose. They are also the result of detailed studies of the requirements of this road, which are unusual in many respects.

Conclusions as to the layout were reached only after an extensive analysis of requirements involving all of the factors affecting the output of these shops, such as the sizes, weights and number of locomotives to be repaired, the annual mileage of locomotives and the seasonal mileage peaks, the relative machinery and boiler repairs as influenced by road conditions and the character of water and the relation between engine and tender repairs. The conditions affecting the output of

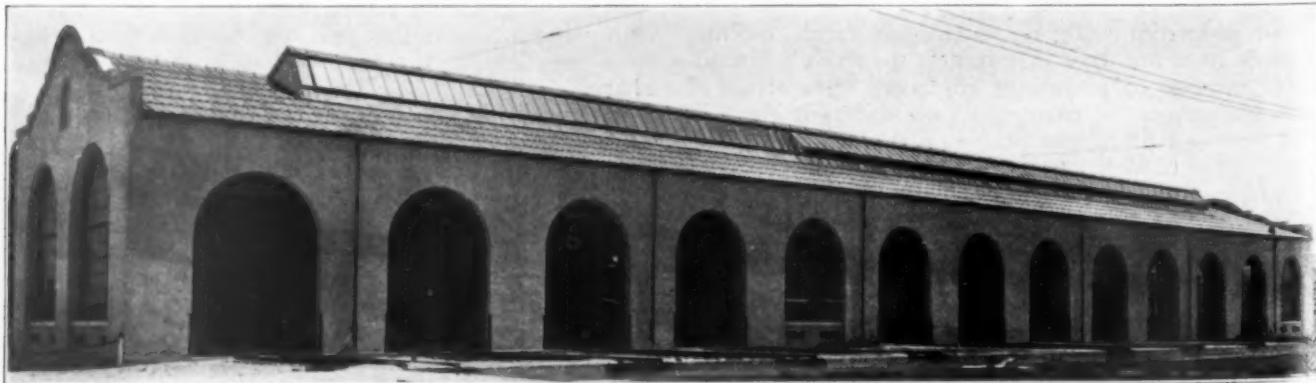
cars included the number of cars of each type, the seasonal demand for service, elements of wear, the effect of climatic conditions causing corrosion, and the cycles for heavy and light repair and painting.

To give due consideration to all these factors required a great deal of time; in fact the study was continued throughout an entire year before work on detail plans was undertaken. However, as a result of this investigation it is believed that a plant has been evolved which will insure a maximum of economy in operation. It was also responsible for a marked reduction in capital expenditures, because the layout finally adopted is far less extensive than that originally contemplated.

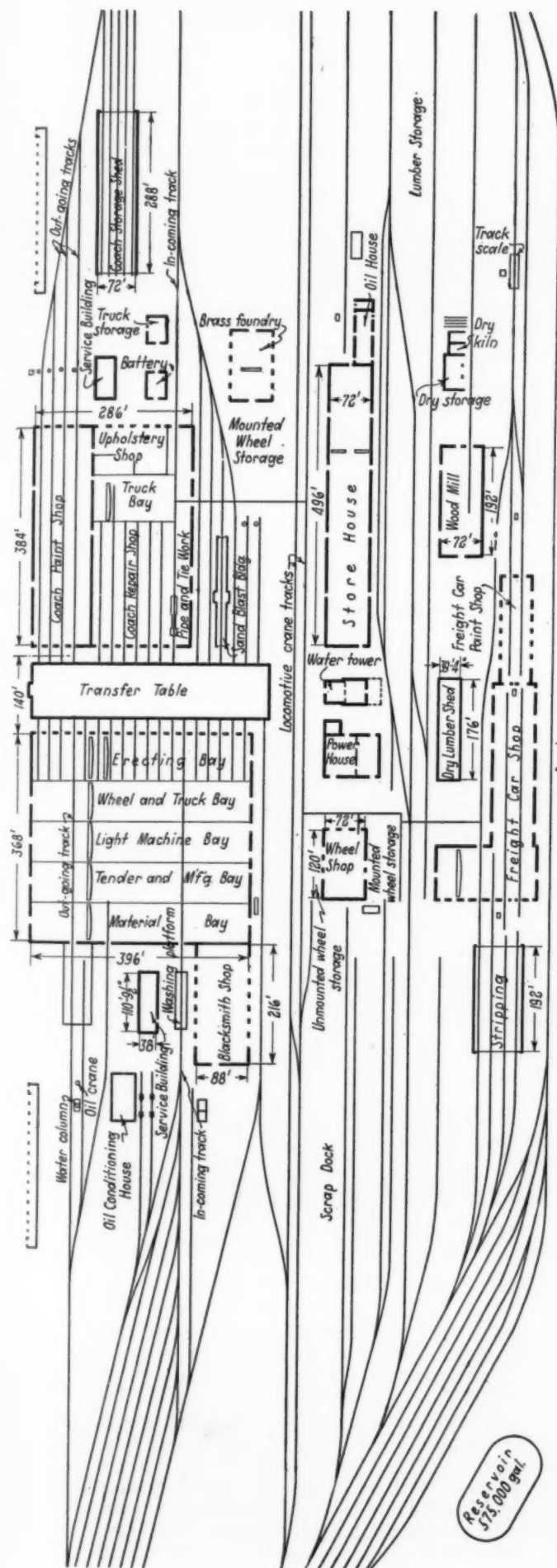
Each Department Self-Contained

The buildings and facilities were grouped so that each department will be self-contained as far as practicable and so that facilities common to all are located for the best combined service. Locomotives are received and delivered at the north end of the plant. Passenger equipment is handled from the south and freight equipment is worked through from the north to the south. The routing of the first two follows the "U" type of progression and the latter, a straight line.

Inasmuch as the "days in shop" for each unit, either locomotive or car, constitute the determining factor in establishing the size of the erecting shops for a given



The Coach Repair and Paint Shop As Seen From the Transfer Table



capacity and the "minimum days in shop" depend largely upon proper scheduling and balancing departmental operation, careful consideration was given to the size of each department, and to proper and adequate tooling as well as the tool layout. Time studies were made of machine operation to determine the kind and number of machines for each department.

Locomotive Shop Has Five Bays

The locomotive shop is almost square in plan, consisting of five parallel bays having an aggregate width of 368 ft. and a length of 396 ft. At the south side is an erecting bay 80 ft. wide equipped with a 200-ton four-hook, high-level gap crane and a 15-ton messenger crane at a lower level. North of this bay are four bays, each 72 ft. wide, which are used respectively as a wheel and truck bay, a light machine bay, a tender and manufacturing bay and a material bay. The tender and manufacturing bay is served by a 50-ton, four-hook gap crane and the other three by 15-ton messenger cranes. The runways for the crane in the wheel and truck bay extend through the west wall to serve a tire storage and setting yard and to unload and store boiler and tank plates. The runways for the crane in the material bay are also continuous with outside runways extending west across the entire shop yard, so that the crane may serve outside as well as inside material storage.

The west end of the shop building is occupied by the boiler shop, the erecting and machine bays of the boiler shop corresponding to those of the machine and locomotive erection shop. The blacksmith shop occupies a wing, 88 ft. wide, extending north a distance of 216 ft. from the west side of the locomotive shop.

The Routing of Locomotives

The significance of this unique arrangement of the locomotive repair facilities will be appreciated from the following outline of the routing of engines and tenders in the course of repair operations. The outstanding feature of the plan is the fact that the locomotive storage yard is located north of the shop so that the engines must pass through the four auxiliary bays to reach the erecting bay over the incoming track and to leave the erecting bay over the outgoing track. Engines and tenders are uncoupled in the storage yard and the tenders are sent to the oil stations where the fuel oil is drained and returned to the storage nearby and the cisterns cleaned for repairs.

The first "spot" for the locomotive on the incoming track is in the light machine bay. This position is served with a stripping pit where all stripping is done preparatory to unwheeling. A well ventilated lye vat is located adjacent to the locomotive in this position. Facilities for the repair of parts removed here are located in the same bay and these parts are assembled in this bay at the final assembly position on the outgoing track.

After the initial stripping the engine is moved to a second "spot" in the erecting bay. When lifted from the wheels and trucks in this position, the boiler and frame are set on an erecting pit. Boilers, cut from the frames for heavy

work in the boiler shops, are handled by the same erecting bay crane to the boiler shop at the west end. The third "spot" is on the outgoing track in the erect-



A Corner of the Wheel Shop

ing bay where assembly begins. Wheels and trucks, when released on the incoming track, and after having been rolled to the adjacent wheel bay for repairs and box fittings, progress through that bay to the outgoing

locomotive shop under a continuous roof. It is equipped to supply oil and water to the tenders and is provided with pits and monorail hoists. Here minor adjustments can be made when necessary during the time that the locomotive is being broken in. All movements made after the locomotive is set on the incoming track, are made by hauls or winches, no switching service being required.

All departments for repairs and sub-assemblies are located relative to the sequence of their stripping and assembly. In addition to a careful selection of tools to balance all operations properly, certain desired equipment not commercially produced was designed and built especially to expedite machine operations and material movements.

Coach Shop

All passenger equipment is received at the south end of the coach shop. Cars are first spotted by a switch engine on the incoming track adjacent to the battery house where the batteries are removed. From this point all movements are made by car hauls. As the car enters the shop it is first spotted for stripping and cleaning. All trim removed is placed in specially designed containers or trailers, on which it is stored through the various processes of repairs or renovation, all successive stages being progressively in the direction toward the final position of the car where it is trimmed.

When the trim is removed and the car is cleaned, the trucks are removed on a Whiting electric hoist; shop trucks are placed under it and it is placed in position for repairs. The car trucks are shifted to the machine



Interior and Exterior of the Store House

track and the wheeling spot. When the wheeling is done and shoes, wedges and binders are set, the engine moves to the final assembly "spot" on the outgoing track in the light machine bay which is also provided with an erecting pit.

Repair schedules are made so that tenders entering the shop on the incoming track for the tender repair bay are dated to have repairs completed and meet the engine at the final assembly "spot" where they are coupled and final tests are made preparatory to movement to the fire-up shed. This shed is an extension to the

and truck bay where repairs are made under a 15-ton, floor-operated Niles electric traveling crane. When repairs to trucks are completed they are tiered in storage in that bay until the car is ready for trucking.

Because of climatic conditions the problems of corrosion and protective covering of steel cars must have the most careful attention. For this reason, a sand blast building has been provided where cars are thoroughly sand blasted and primed. They are then trucked to the paint shop for final painting and trimming. All transverse movement are made on a Nichols 100-ton elec-

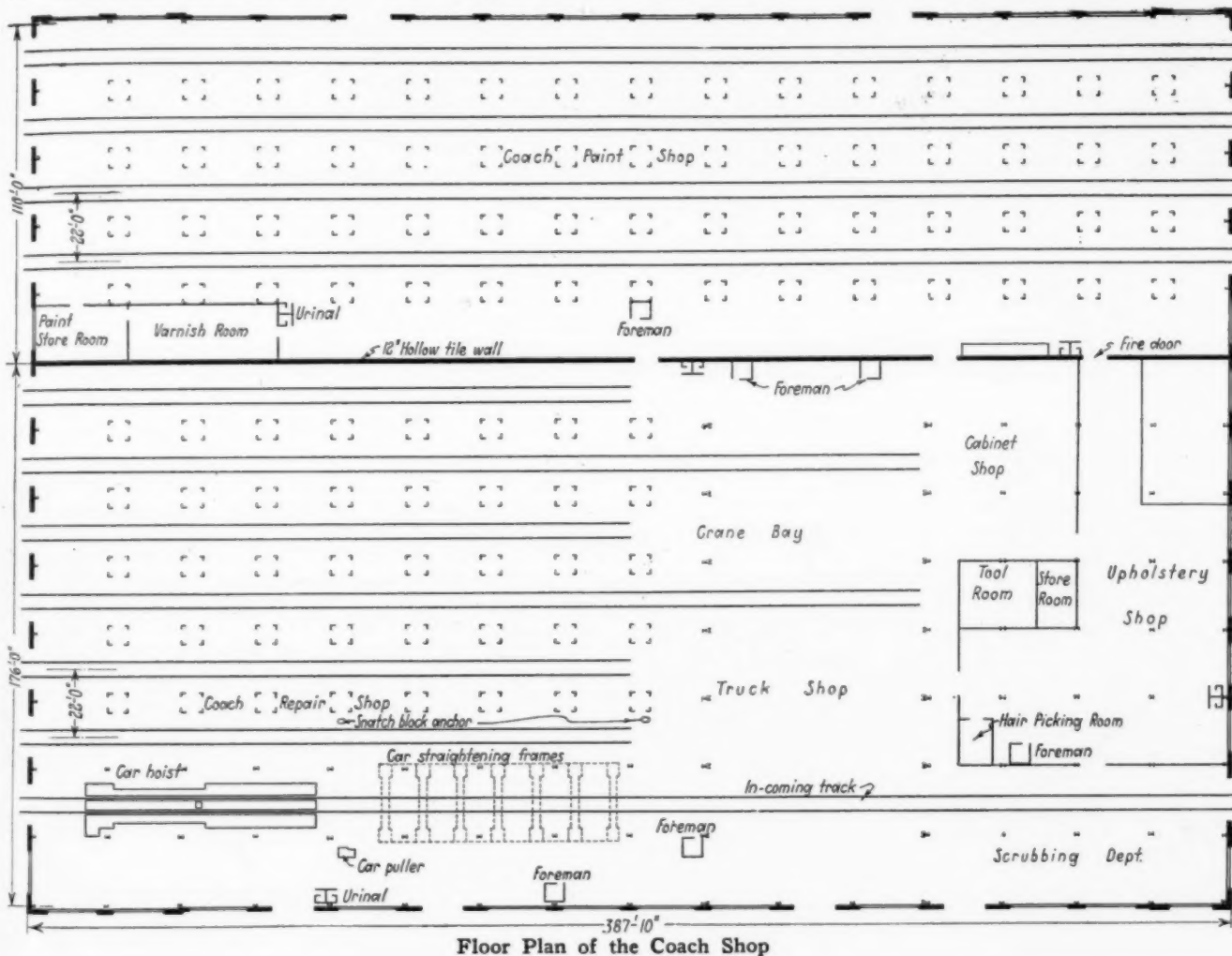
tric transfer table; others are made with electric car hauls or winches.

The bay in which trucks are repaired also provides space for machine tools required for trucks, foundation brake rigging and steel work on the cars. Pipe and tin shops are located along the west wall adjacent to the car hoist where stripping and assembling are done. The upholstering and cabinet shops are adjacent to the machine bay but arranged so that their operation is independent of all other departments.

Machine tools are supplemented with special equipment, including portable grinders, spring testers, a spray booth, a cushion washer, portable and stationary racks, trucks and trailers. The traveling crane and the mono-rail hoists used for sheet renewals are supplemented

two parallel tracks, for movement through the five spots where decking, sheathing, lining, roofing, doors, safety appliances and air brakes are applied. When repairs are completed in the last position, the cars pass into the paint shop for painting and stenciling, the paint shop being equipped with a heating and ventilating system to expedite drying. South of the paint shop is a track scale on which all cars are reweighed at the time they are picked up by the switch engine to be placed in service.

In addition to the erecting positions the transverse bay provides space for the tools and fires necessary for forging, machining and fabrication of parts taken from trucks and frames for light repairs, thus supplementing the quantity production of repair parts handled in the



Floor Plan of the Coach Shop

with an electric crane truck to handle inter-bay and local movements of material.

Freight Car Shop

The freight car shop is designed for the progressive movement of cars from inspection to reweighing. Cars are placed in the inspection and classification yard at the north end of the plant where they are inspected and marked for stripping. They are then set in the stripping shed in proper order, from which position they are moved forward through the shop by means of car hauls. The first spot in the shop is in a transverse bay, served by a 50-ton, four-hook gap crane. In this bay trucks are removed and repaired while renewals and repairs are completed on sills, frames, and draft gear. The car is then assembled on its trucks on one of the

blacksmith shop. Sub-departments for handling piping, air brakes, and roofing are located adjacent to assembly positions and electric and air tools are provided to replace hand work where they can be used to advantage. Gangs are organized to perform individual classes of work and cars and materials are moved to their positions as the work progresses.

Wheel Shop

The wheel shop is designed to handle all mounting and demounting in through movements and the layout is planned for the shortest possible direct movement of axles and wheels. Specially designed labor-saving equipment is provided to supplement the axle lathes, boring mills, and presses.

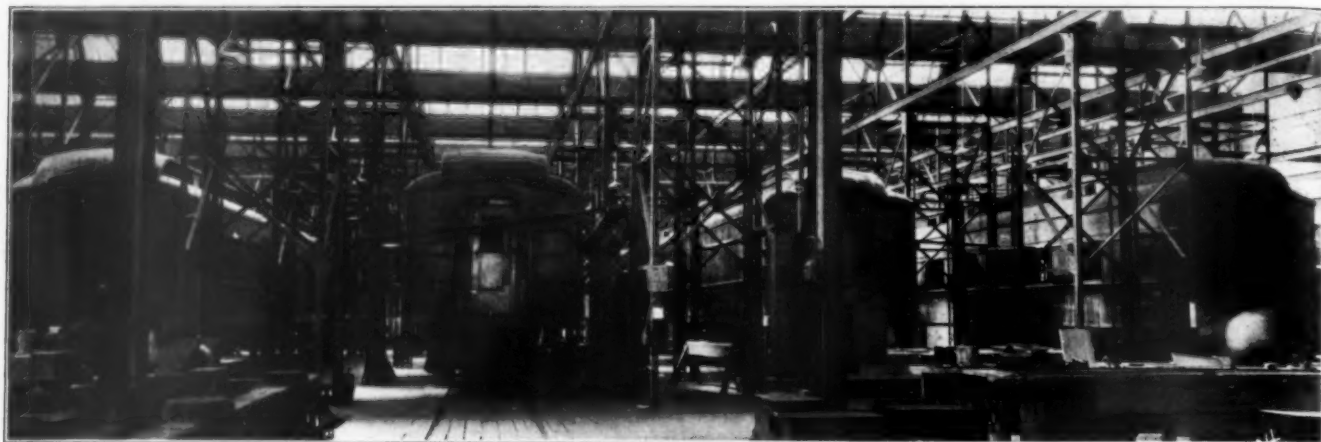
A brass foundry, housed in a building 120 ft. by 72

ft., produces all cast brass, including journal bearings, used on the system. It is equipped with modern furnaces, molding machines, sand conditioners, a hand-operated traveling crane for pouring, a core oven, wet and dry tumblers, journal bearing borers, and lining furnaces. The layout provides for the direct move-

cilities are arranged to serve white and colored employees separately.

Power and Light Facilities

Three-phase alternating current is delivered to the site at 66,000 volts and reduced through two transform-



Interior of the Coach Repair Shop

ment from raw materials at the south end of the foundry to the finished materials at the north end.

A Well Appointed Stores Department

The stores department is located centrally and with adequate track facilities for the receipt of all materials and the loading of outbound cars for system distribution. The building houses the offices of the department, materials for shop and roadway, and a department for oil and waste enclosed in fire walls, also a pattern storage enclosed in fire walls and equipment for mounting air brake and steam hose. All material deliveries are handled by this department. A telephone system, roadways, locomotive cranes, an electric crane truck, a lift truck and tractors and trailers are provided to make the system of material handling complete.

There are three service buildings containing lavatories, toilet facilities and lockers, conveniently located for employees in the several departments. These are supplemented with the usual facilities, distributed according to requirements throughout the plant. All fa-

er stations. The first station, located near the west property line, reduces it to 2300 volts. The secondaries are carried through underground conduit to the second transformer bank outside of the power house where the voltage is reduced to 440 volts for power and 220-110 volts for lighting. Current is tapped from the 2300-volt line for use in motors driving the two air compressors.

All motors, except fractional horse power motors taking current from lighting circuits, are designed for 440-volt alternating current.

The use of steam is limited to the usual demands for processing, no steam being used for heating. The boiler plant consists of two 150-hp. water-tube, oil-burning boilers with induced draft, soot blowers, draft regulators, carbon-dioxide recorders, and boiler feed, service and fire pumps. The engine room contains the distributing switchboard and one 1145-cu. ft. and one 2200-cu. ft. motor-driven air compressor. Provision is made for the ultimate installation of two oil-electric generating sets.



The Heavy Machinery of the Locomotive Shop

Water Supply

The water supply for the service system and fire protection is obtained from deep wells, from which it flows under artesian pressure to an aerating pond to release sulphur gases. From the pond it flows by gravity through a cast iron pipe to a sump at the power house from which it is pumped to a 125,000-gal. service tank supported on a steel tower which is designed as a part of a building to house the general offices of the mechanical department. The water is highly impregnated with incrusting solids, making it unsatisfactory for boiler use. For this reason, it is advantageous to impound all roof drainage rain water. A cistern was therefore provided as a basement under a part of the store house to which this water is drained and from which it is obtained for boiler make-up in the power house.

Fuel oil is used in locomotives, stationary boilers, furnaces and shop heaters. All oil is received at an oil-conditioning and storage plant located north of the locomotive shops, from which it is piped to the several points of consumption.

Buildings of Unusual Design

The prime requirements in the design of the buildings was fulfilled by self-supporting steel frames for the principle structures but the architectural treatment of walls, roofs, and other details received special consideration, it being particularly desired to combine with durability, low maintenance cost, and reasonable first

tractor. The plant is now operated under the direction of F. S. Robbins, superintendent of motive power and machinery.

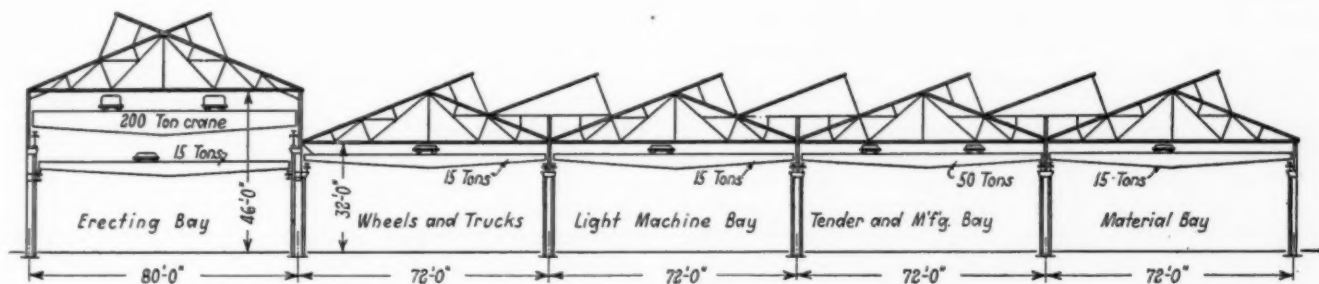
Pooling of Passenger Trains

By E. T. Dakin

General Auditor, Northern Pacific

BY pooling passenger train service between Portland, Ore., and Seattle, Wash., and also between St. Paul, Minn.,—Minneapolis and Duluth, Minn.,—Superior, Wis., the carriers involved are saving more than half a million dollars a year. This saving has been effected without sacrifice of revenue or impairing the service to the public. In fact the service has been improved.

The original act to regulate commerce, passed in 1887, made it unlawful for carriers to pool or divide among themselves any portion of their gross or net earnings. In 1920, this provision was amended so that now the Commission may authorize carriers to pool their tariff or earnings when in the interest of better service to the public or to effect economies in operation, and when competition will not be unduly restrained. Except in the cases referred to later, the Commission has been asked to authorize but one pooling arrangement (74 I. C. C. 444).



A Section Through the Five Bays of the Locomotive Shop

cost, a pleasing appearance harmonizing with the setting and in keeping with other east coast developments.

The result of this study led to the adoption of a Spanish type of architecture, using hollow tile walls covered with two coats of gunite and buff finish. The windows are of steel sash with arched heads. The roofs are of red cement interlocking tile. All floors in the shop buildings, except in the blacksmith shop, are of creosoted wood block on a concrete base. Ample natural lighting is obtained through side wall glass areas and in the locomotive and coach shops, through well ventilated north light saw-tooth monitors. In the blacksmith shop, store house, wheel shop and foundry, roof lighting and ventilation are obtained through butterfly monitors. The small amount of heat required is supplied by specially designed oil-burning, air-tube unit heaters supported between the columns to conserve floor space.

The layout and design of the new plant was the result of an extended study carried out under the direction of H. N. Rodenbaugh, vice-president of the Florida East Coast, by H. M. Brown, special assistant to the vice-president, and George A. Miller, superintendent of motive power, and his staff in co-operation with Battey and Kipp, Inc., consulting engineers, Chicago. The Foundation Company, New York, was the general con-

The Northern Pacific, the Union Pacific and the Great Northern applied for and were granted authority to pool their local and through train earnings between Portland and Seattle, the arrangement becoming effective on April 1, 1925. On June 13, 1926, the Northern Pacific and the Minneapolis, St. Paul & Sault Ste. Marie established a passenger train pool for through business only, between St. Paul-Minneapolis and Duluth-Superior, which arrangement was modified in November, 1927 to admit the Great Northern.

The physical and operating conditions in these two territories differ somewhat. On the coast the Northern Pacific owns and maintains the property from just outside Portland north to Tacoma, and the Union Pacific and the Great Northern enjoying running rights thereon as tenants; from Tacoma to Seattle, the Great Northern operates over Northern Pacific tracks, while the Union Pacific operates jointly with the Chicago, Milwaukee & St. Paul. Between St. Paul-Minneapolis and Duluth-Superior the Northern Pacific, the Soo Line and the Great Northern own and operate their own properties.

The purpose sought to be effected by the two pools were also different. On the coast, the three roads each operated two trains daily; this was sufficient to serve the public, but there was an insistent demand for faster

service. Obviously none of the lines was willing for either of the others to run a fast train alone with the attendant traffic attraction, yet all realized the results of entering upon a fast service war in the face of the rapidly declining passenger business. Hence the executives decided to take advantage of the law and pool the business. As a result, not only did the carriers avoid the expense of three additional fast trains, but they actually discontinued one and effected a material saving in expenses; at the same time, by speeding up one train, service to the public was actually improved.

Between St. Paul-Minneapolis and Duluth-Superior the Northern Pacific, the Soo and the Great Northern operated a total of 10 trains each way daily; this was recognized as more service than the traffic warranted, yet obviously none of the roads was willing to reduce train service and lose business to its competitors. Hence again, resort was had to a pooling arrangement. The immediate result of the Northern Pacific-Soo pool in June, 1926, was the reduction of one train each way daily; when the Great Northern joined in November, 1927, two more trains were discontinued. As a result, substantial economies have been effected, while at the same time service has in no way been impaired.

In one respect, conditions in the two pool territories are alike. Hard surface highways parallel the railroad lines for the entire distances, and here, as elsewhere, the motor coaches and private automobiles have made serious inroads into passenger traffic, not only to and from intermediate points, but between the terminals.

It might be interesting briefly to trace the terms and conditions agreed to by the members of these pools and which were found by the Commission in each case to be just and reasonable, as required by the law. In each case, as to revenues, the pool is treated as a fourth road, the accountants agreeing upon methods whereby each class of revenue is allocated to the pool territory. The Portland-Seattle pool plan contemplates that each member line shall share in the revenues earned by the pool trains in the same proportion as its own revenues bore to the total revenues of the three roads in the corresponding month of 1923, selected as a test period. The procedure between St. Paul-Minneapolis and Duluth-Superior is simpler in that each member participates in the pool passenger and baggage earnings on stated agreed percentages; the division of the other revenues is based on test period relationship percentages established by the experience of the year preceding the pool. In both cases the collections made by each member in the first instance are adjusted in a monthly equalizing statement to the agreed or test period basis, by which each

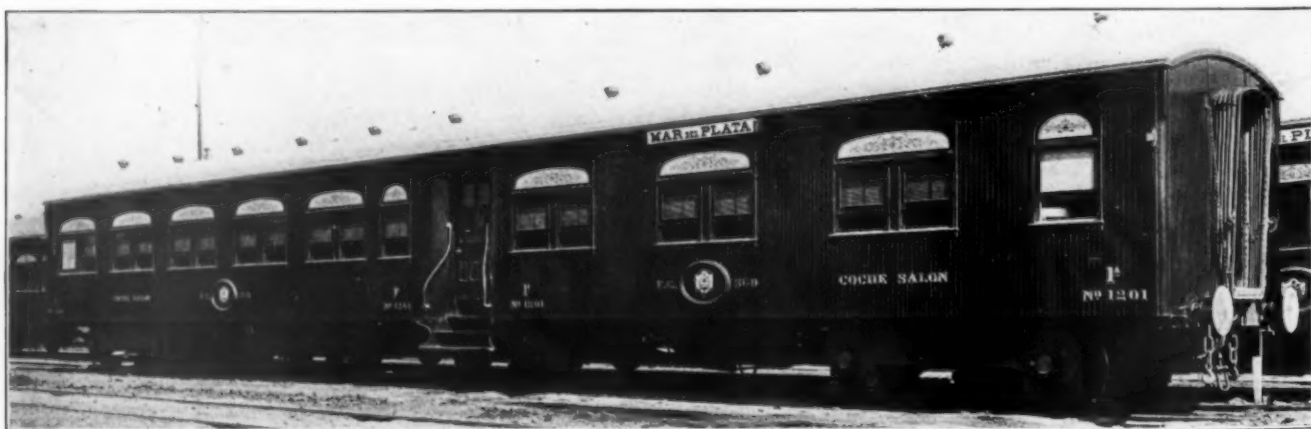
member line receives the same proportion of current revenues as it would have earned independently.

As to expenses, under the Portland-Seattle arrangement, the accountants agreed upon the items to be considered as pool train costs and how they should be determined and allocated to the pool territory. The proportion of such items incurred by each company to the total expenses of the three roads in each month of 1923, established the test period ratios which are used to adjust the expenses incurred by each member in the first instance during each month of the pool period. Subsequent experience has shown this plan to be not only cumbersome and expensive, but inequitable and it is now plain that where a pool results in the discontinuance of a train of only one member, as in this case, all that is necessary, so far as expenses are concerned, is for the savings thus effected by the pool to be divided equally among the pool members, each absorbing the costs of the pool trains it operates.

Through the experience gained on the coast, the expense division of the pool between St. Paul-Minneapolis and Duluth-Superior was made extremely simple. The pool accomplished the discontinuance of three trains, one by each member; each secures its share of the pool benefits by absorbing the savings of its own trains; each absorbs the costs, without adjustment, of the pool trains operated by it, which is fair inasmuch as each secures its pre-pool proportion of revenues. When a special or extra section of a pool train is operated under the Portland-Seattle pool, the expense is recorded and charged to the pool; in the other pool, the line haul member receives a flat stated allowance.

It is strange that carriers have not availed themselves more freely of the opportunity to pool and thus minimize the expense incident to duplicate train service. Duplication of fixed improvements and of switching, with the attendant carrying, maintenance and operation costs, are in large measure avoided by carriers all over the country by joint facility arrangements, and there is no essential difference between the joint use of fixed property and a joint interest in train service. In either case (assuming the pools are operated along lines similar to those described) each carrier receives the same revenues as it would under independent operation, yet shares in the substantial savings. When one considers that operating expenses (not to mention other costs) consume a large percentage of passenger train earnings (on some roads over 100 per cent), the pooling provision of the law seems to offer one measure of relief. Further, it is possible that where duplication of freight service exists, costs may similarly be reduced.

* * *



A Club Car on the Buenos Aires Southern

Overhead Construction on the Great Northern

Contact system as installed on curves is application of the Jorstad formula for inclined catenary

By A. M. Wright

General Engineering Department, Westinghouse Electric & Manufacturing Company

THE original electrification on the Great Northern through its 2¾-mile Cascade tunnel in Washington has been extended westward to Skykomish, Wash., a distance of approximately 23 miles. The 6,600 volt, three-phase system has been replaced by an 11,000-volt, single-phase system with overhead catenary contact system.

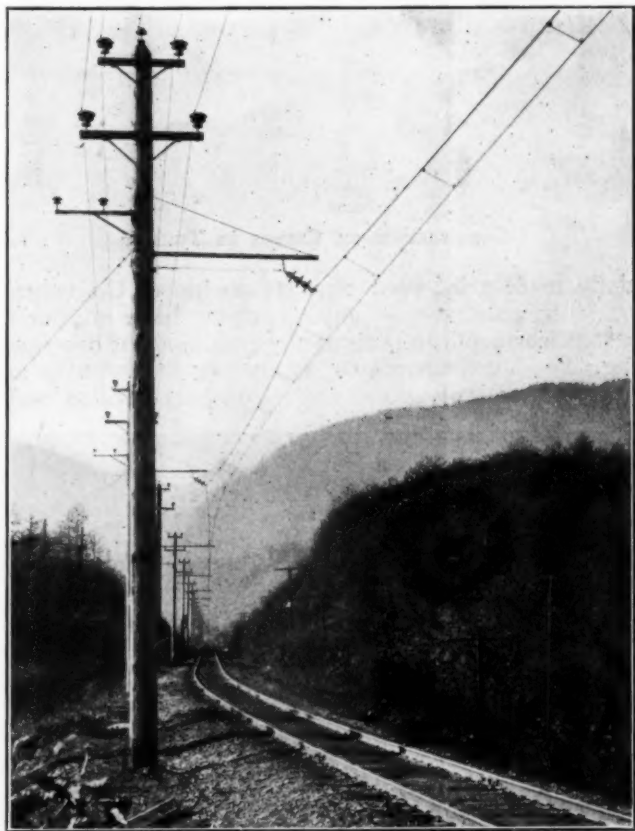
The success of the contact system used on the new installation, which is demonstrated by smooth current collection, limited wear on the pantagraph strips, and continued alignment of the contact wire, must in a large measure be attributed to the inherent qualities of the inclined catenary and to the accuracy of the mathematical analysis upon which the design here used was based.

There is a great deal of curvature in the track between Skykomish and Cascade tunnel, much of it being of ten degrees. Because of this, inclined catenary was chosen as being the most suitable type of overhead construction. A single 0000 cadmium bronze contact wire is used everywhere on the main track, and is supported by a single messenger cable. The messenger, however, is not uniform throughout. At Tonga and at Scenic the track makes almost complete loops. Advantage was taken of this condition to gain a saving in messenger cable.

Where the two sides of each loop are closest together, at the entrance to the loop a conductor connects the catenary on one side of the loop to the catenary on the other side. This arrangement permits the trolley in the loop to be fed from either direction and thus the conductivity of the messenger used in the loops does not need to be as great as that of the messenger on other sections of the line. The messenger around the loops is 0000 stranded bronze and elsewhere it is a 19-strand cable consisting of twelve strands of No. 7 copper and seven strands of No. 7 bronze or Copperweld.

In the yard at Skykomish the messenger cable

line is carried on the wooden poles supporting the contact system. At the present time, however, only one circuit is in use.



Bracket Arm Construction on Curved Track

A single circuit operating at 4400 volts is also installed on the same poles. Bracket arms are considered standard, but as the transmission line is always car-

Size of Wire.....	WIRES AND CABLES USED						
	19/7	19/7	0000	0000	¾ inch	000	
Composition	12 Strands Copper, 7 Strands High Strength Bronze	12 Strands Copper, 7 Strands Hiten- sile Copperweld	"Hitenso" Wire Solid	Cadmium Bronze Stranded	High Strength Bronze Stranded	"Hitenso" Wire Solid	Contact
Per Cent Conductivity Pure Copper.....	63	74	58	55	14	55	
Weight per foot (lb.)	1.221	1.180	.641	.6533	.338	.509	
Breaking Stress (lb.)	23,000	25,500	11,600	12,460	10,800	9,500	
Use	Main Messenger Cable	Main Messenger Cable	Main Contact Wire	Messenger Cable	Yard Messenger	Yard Contact Wire	
Normal Tension (lb.)	4,700	4,700	2,500	2,500	1,280	2,000	

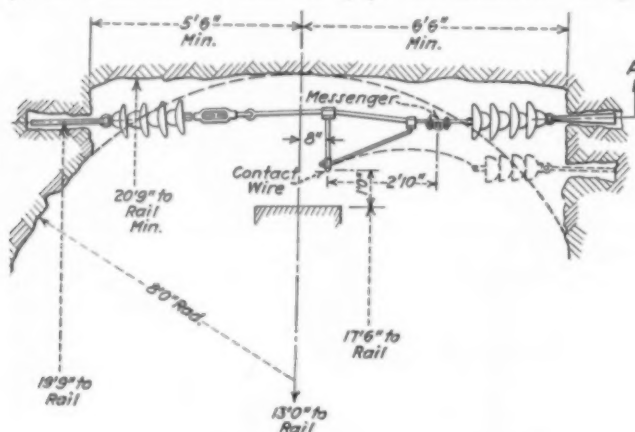
The transmission line uses size 0000 hard drawn copper conductors.

is of stranded bronze ¾ in. in diameter. This same size messenger is used on sidings, also.

A double circuit 44,000-volt single-phase transmission

ried on the south side of the track, cross spans are necessary where the curves are convex to the north. On tangent track the standard span length is 150 ft. On

curves, however, this span length is shortened, partly on account of the heavy loads encountered in the winter time, but chiefly because the middle ordinate of the contact wire on a sharp curve and with a long span would be excessive. The increased tension of the cables, due to low temperature, together with the heavy snow loading which is a characteristic of this region, would cause the curve pull to become excessive if long spans were used. All poles are guyed on curves with $\frac{5}{8}$ -in. steel strand, and the guys are anchored in spe-



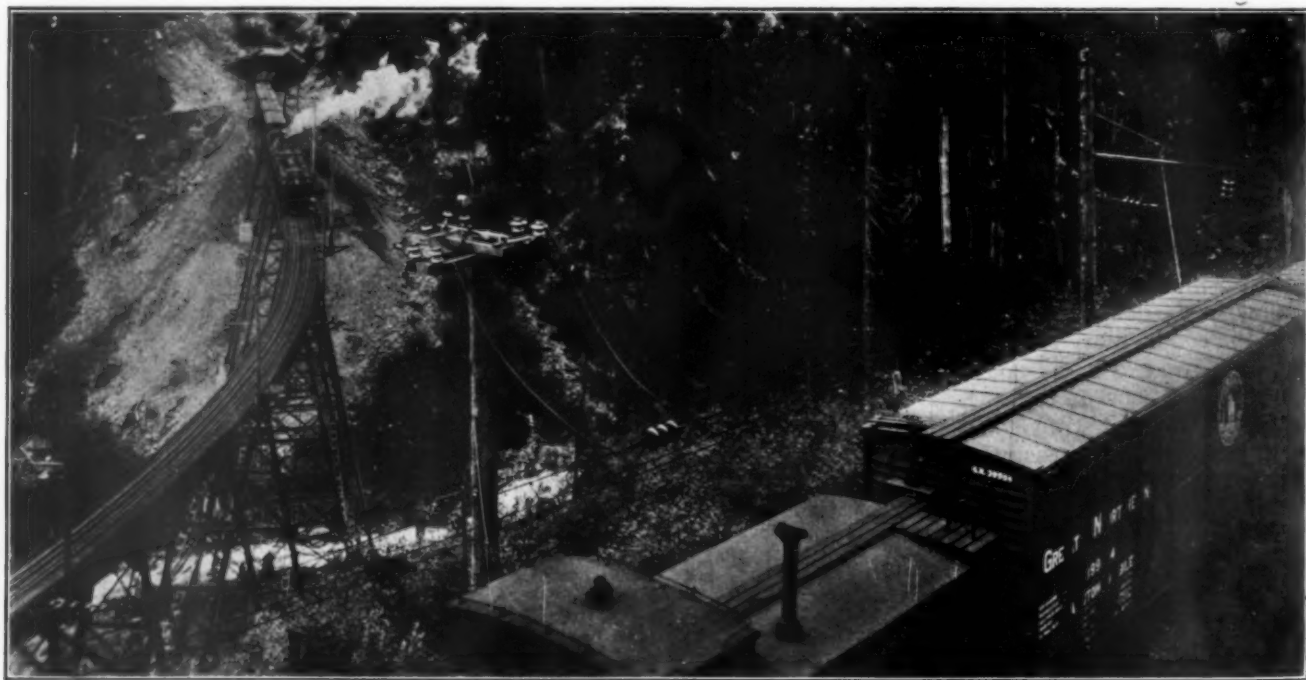
Construction on Curves in Tunnels

cially made reinforced concrete anchors. On tangent track the poles are not guyed, but the butts are buried a sufficient depth to prevent any possibility of overturning. The bracket arms for supporting the catenary are made of two galvanized angle irons, set back to back,

Ample insulation was provided in the contact line, as this was considered a reliable form of insurance against the possibility of breakdown, due to soot and dirt being deposited on the insulators. Three discs in series were used as a suspension insulator, having a trade voltage rating of 60,000 volts; the pin type insulators used on the contact line have a trade voltage rating of 45,000 volts. This liberal insulation has been amply justified, particularly in snow sheds and tunnels, where steam locomotives are allowed to "smoke through." Here such deposits of carbon and grease are found that very frequent cleaning of insulators would be necessary if less insulation were used. Also, in the snowsheds, much dirt is washed through onto the contact lines by melting snow in the springtime.

Overhead in Snowsheds and Tunnels

There are about six miles of snowsheds on the electrified section of the Great Northern in which the standard inclined catenary is used, the insulator supports being fastened to the roof of the snowshed. These sheds are very substantially built and are not affected by the additional stresses due to the contact line tensions. The construction adopted in the tunnels, which are on curved track, is worthy of mention. An illustration shows a cross section of the Martin Creek tunnel, which is on a ten degree curve. Two sets of insulators, each composed of four discs in series, are mounted, one on either side of the tunnel roof. These are connected by a strand under a tension of about 500 lb. The messenger is clamped to this strand at the proper distance from the center line of the track, and the contact wire is "pulled off" to its correct position by a rod which is also fastened to the cross strand. To prevent the con-



Front and Rear of 70-Car Train Descending 2.2 Per Cent Grade with Regeneration Through Horseshoe Curve Tunnel at Martins Creek

and tied to the pole by means of a $\frac{5}{8}$ -in. steel tension rod.

For a given weight this double angle bracket arm is stronger than a T-arm. On tangent track the catenary is supported on a pin type insulator, and on curved track suspension insulators are used. The bracket arm is suitable for either type of insulator.

tact wire from rising due to the uplift of this pull-off rod, a strut is fastened between the cross strand and the contact wire. There is sufficient flexibility in the cross strand to prevent trouble from a hard spot and the point of support. The Martin Creek tunnel is more than 1600 ft. long on a 10 degree curve and has only 18 attachments similar to that illustrated.

Special type insulators are used in the Cascade tunnel. The lower disc is a standard suspension unit, and is added to provide additional creepage distance and higher flashover voltage, as well as to provide some flexibility in the longitudinal direction. These insulators are spaced 50 ft. apart, thus giving a small sag in the messenger, which is a $\frac{3}{8}$ -in. cable. The 0000 contact wire is clipped to the messenger at the quarter points of each span, giving a contact wire supported every 25 ft.

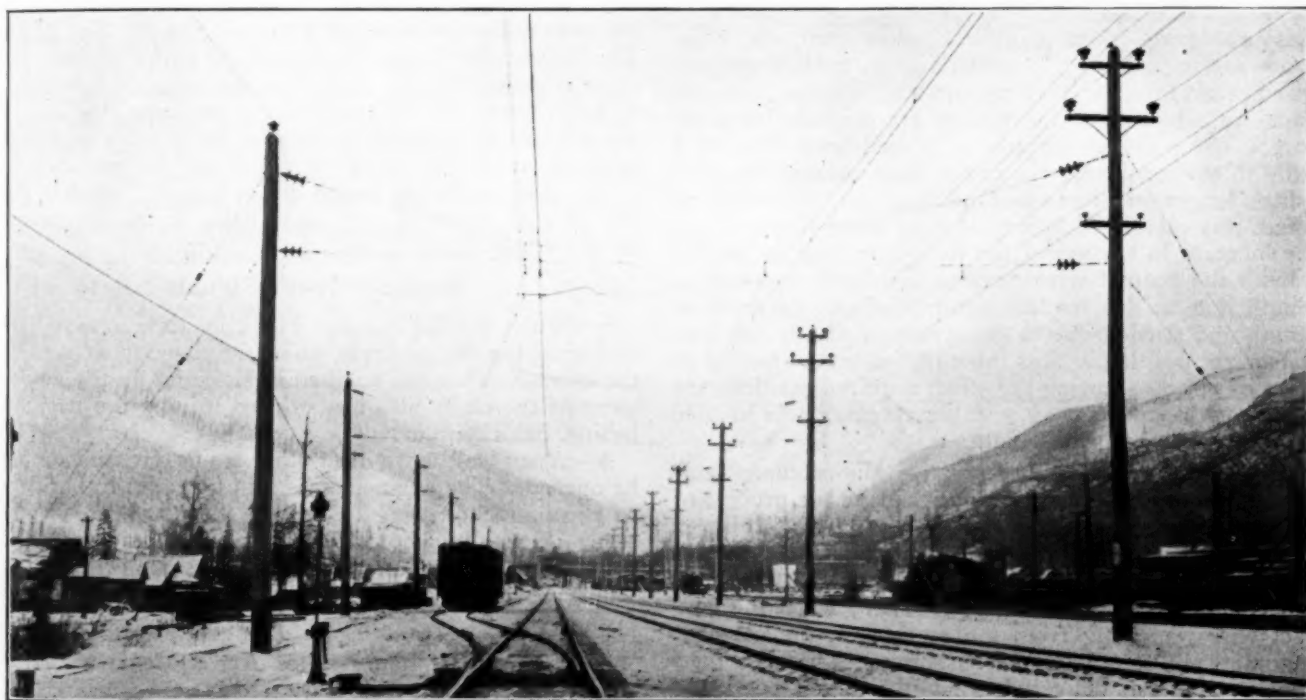
The tension in the contact line was made as high as was considered allowable, considering the increase in tension during cold weather. A normal tension of 2500 lb. at 60 deg. F. was chosen for the 0000 contact wire, and the messenger tension was then determined from the relation for inclined catenary:

$$T_c : T_m = W_c : W_m *$$

Thus a normal tension of 4700 lb. was arrived at for the messenger cable. On sharp curves the angle be-

steel cable. The cross spans consist of a cross catenary and a cross steady wire, there being vertical droppers between the cross catenary and steady wire. In most cases the messenger cable is clamped directly to the steady wire, the insulation being placed in the cross span wires rather than between the contact system and the cross span.

The hangers on the main line are of two types, namely, the loop type which is used on tangent track; and the inclined type, which is used on curves. The loop hangers are clipped to the contact wire and are suspended from the messenger by means of a loop. No sleeve is used to protect the messenger from wear by arcing, but in every span there is a jumper cable connecting the messenger to the contact wire. The mechanical wear due to movement of the hangers will be negligible. The inclined hangers consist of a $\frac{3}{8}$ -in. rod which is clamped to the messenger at one end, and to the contact wire at the other. No current-carrying jumpers are used on



View of Skykomish Yard Showing Span Construction

tween the hangers and the horizontal plane is rather acute, so a pull-off yoke is used at each pole on curves greater than four degrees. Thus, on a curve of ten degrees, the contact wire is carried around the curve in a series of arcs of four-degree curvature, the difference between the four degrees and the ten degrees being taken up by the pull-off.

On sidings, inclined catenary is used because in most cases the siding consists of a long passing track where inclined catenary can be installed as readily as on the main track. In the yards at Skykomish, Tye and Cascade tunnel, however, chord construction is used. Simple catenary (i. e., a single messenger supporting a single contact wire) is used in the yards as well as on the main line, and "loop" type tangent hangers are used to support the contact wire. At turnouts, spreaders are used to maintain the correct distance between the contact wires and the contact wires are not crossed at any point. The catenary is suspended from cross-spans of

curves, as the inclined hangers are capable of carrying all the current required from the messenger to the contact wire. These hangers are arranged so as to maintain the correct inclination between the messenger and the contact line. All the lengths and angles were calculated previous to erection by the aid of a chart. The length, angles, and spacings of all hangers used on this electrification were specified beforehand, and the hangers were installed in accordance with this information.

Design Requirements

All catenary systems should be completely designed, and special work taken into account before erection is begun. The compilation of tables giving accurate information regarding offsets and clearances will greatly reduce field work and the labor of erection. It will also insure that the catenary will be aligned to the required degree of accuracy with a minimum of subsequent adjustments. With inclined catenary, due to the limited experience of most linemen, it is especially important that the geometry of the system be accurately

* Transactions A.I.E.E., June, 1927, O. M. Jorstad, "Standardized Catenary Design."

worked out and the results written down in the form of tables for field use.

When the poles, bracket arms and insulators have been located in accordance with these tables, the erection forces must "sag" the messenger cable until the correct no-load tension is obtained. Once this tension is secured all that is necessary is to clip in the contact wire, since the mechanical laws on which inclined catenary depends require that the system take the proper shape when the specified tension is applied to the wires, and when the lengths of the hangers erected agree with the design calculations.

Due to the curve pull of the contact wire, there is a "horizontal sag" in the messenger cable of any inclined catenary system. This means that for a given messenger tension, there is somewhat more wire in a 150-foot span on a curve than in a 150-foot span on tangent track. In erecting the unloaded messenger, therefore, provision must be made for this extra wire. This provision could be made by the separate "no-load" sagging of each individual span, but the work necessitated by this procedure, where flexible bracket arms and cross spans are used, would be excessive. A method was devised, therefore, so that the no-load tension was the same on all parts of the system for a given temperature. The point of support on curved track was set a little to the outside of the curve, thus making the span a little longer on curves than on tangent. The required offset was calculated by considering three factors; first the increase in tension of the messenger due to loading it with the contact wire; second, its elastic increase in length due to this loading; and third, its decrease in length and tension due to being moved afterwards into its correct position. This information was embodied in a set of curves showing the offset required for different span lengths and curves, and the catenary was erected in accordance with these data.

In conformity to modern practice, the catenary cable was placed on rollers, or sheaves, during the process of stringing, and when the correct "no load sag" had been obtained, the messenger cable was clamped to the insulator string, and on curves the insulator string was moved into its correct position. Then, when the contact wire was hung from the messenger, the catenary automatically took its correct position. The main messenger cable was delivered in lengths to suit particular locations. A typical reel holds about 7,000 ft. of cable. There were generally two reels between air sections, where provision was made to anchor the contact wires. It was found practicable to sag 7,000 ft. of catenary wire with adjustments from one end only. If there were less curvature, and if larger sheaves were used, it might be possible to sag 14,000 ft., making adjustments from one end.

One factor which undoubtedly contributed to the success of the system was the accurate and conscientious manner in which the erection contractor installed the system. The more important fittings, such as hangers, both tangent and inclined, pull-off yokes, spreaders, and special tunnel attachments, together with the insulators are also giving excellent performance and have contributed a great deal to the success of this simplified catenary system.

COLONEL SIR JOHN W. PRINGLE, C. B., chief inspecting officer of railways for the British Ministry of Transport, is the chairman of a committee which has been appointed to review the electric propulsion standards recommended, in 1921, by an advisory committee which reported in that year.

Chesapeake & Ohio Experiments with Radio

THE experiments which the Chesapeake & Ohio is making with radio apparatus for communicating from caboose to locomotive on long freight trains, reported in the *Railway Age* of February 4, page 33, are being continued with a view to overcoming some of the difficulties that have been encountered. The experiments, however, have already shown the advantages of this means of communication so clearly that the trainmen, knowing on what trains the experiments are to be made, seek to have themselves assigned to those trains.

G. W. Bebout, electrical engineer of the road, sets forth the satisfactory results already attained as follows:

Saves Coal, Avoids Delays

1—From two to three tons of coal saved on a trip by shortening the time of trips of Engine No. 2339. This would also result in reduction of fuel consumed on other engines, through the better operation of this train.

2—In event of train separating en route, the crews are advised of the exact nature of the trouble in a few minutes, have the trouble corrected, and be gone before a man could walk the length of the train. This has occurred with result of very small delay to the movement of the train.

Replaces Hand Signals

3—When the flagmen are called in, time is saved by notifying the engine crew when the flagman arrives at the caboose. This has resulted in speeding up the movement of the train, also has stopped leaving the flagman behind, which occurred occasionally.

4—When waiting to meet other trains, crossings must be opened. The engineman is told by radio to back up to permit the crossing to be cut, then to proceed and stop; also to make movements for reconnecting the train, test air brakes, and proceed, saving time that would be lost by the brakeman walking considerable distance.

Useful When Brakes Are Defective

5—When stuck brakes are noticed, the engineman is notified by radio, and the train speed reduced to permit the front brakeman to get off and correct the trouble, and the train proceeds. The brakeman then rides the caboose until the next stop.

6—A car having a defective brake apparatus had to be taken out of the middle of the train. This situation was handled by radio communication. The car was set out, the cars recoupled, brakes tested and train moved in a few minutes. Otherwise at least half an hour would have been consumed in this operation.

Accurate Stops in Sidings

7—On entering sidings, the engineman is advised the relative position of the caboose to the switch, so he knows how far to move; also advised when the switch is closed and the rear brakeman has reached the caboose so he can proceed. The same procedure applies when leaving the siding, thus saving considerable time.

8—Dense fogs prevail along the river at certain periods of the year, when it is impossible to see signals being given by the trainmen, in which event the radio equipment is valuable in handling trains. This is also true in heavy snow storms.

Train-Miles and Train-Hours Decrease

Savings from higher freight train-speeds and decreased train-hours estimated at \$84,000,000 annually

IN a preceding article the growth of the traffic of the Class I railroads for the period from 1911 to 1926 was compared with the expansion of the facilities devoted to the service of handling that traffic. The comparison was effected by charting percentage ratios based on the figures for the year ended June 30, 1913, as 100. It developed that the increase in investment in road and equipment since 1913 had been such as the end of 1926 as to exceed the percentage of increase in the same period in revenue ton-miles, even though the volume of freight traffic for the year broke all previous records of freight traffic volume.

In the effort to determine the classes of facilities in which the more substantial expansion had taken place, it was shown that there had been practically no increase in miles of railroad line, although there had been a fairly substantial increase in miles of second and other multiple track. It further appeared that the greatest percentage increase shown by any of the groups of facilities analyzed had taken place in the mileage of automatic block signals. It was shown that only a small increase had taken place in the number of either cars or locomotives, although increased size of the equipment units had effected some increase in the aggregate tractive force of locomotives.

A further interesting feature was the attempt to determine the degree of increased utilization, particularly of locomotives, which is alleged to be the cause of a decline in acquisitions of new power in the last three or four years. It was shown that the increase in the revenue freight train-load had been such as to make it possible to handle the growing traffic of succeeding peak years without increase in the number of freight train-miles. Thus, it was pointed out that the number of freight-train miles in each of the peak years since 1913 was about the same as in 1913. In 1926, which is the latest and most outstanding example of this condition, although the revenue ton-miles were 49 per cent greater than in 1913 the train-miles proved to be 3 per cent less.

In the present article the attempt will be made to evaluate the increased utilization of motive power in somewhat greater detail. Further attention will be given to the carriers' ability to handle a greater traffic with the same or fewer train-miles, but beyond that a new and equally important consideration will be added; namely, the remarkable decrease in the freight train-hours.

1920 Taken as Base Year

Whereas, in the first part of the article percentage comparisons were made for the years 1911 to 1926, using the year ended June 30, 1913, as the base year, in this article the comparisons will be made for the years 1920 to 1927, using 1920 as the base year. The data are the operating statistics reported to the Interstate Commerce Commission on its monthly O. S. or operating statistics forms and are only available beginning with the year 1920. The figures for the full years to 1926 will be shown as percentages of the figures for the full year 1920 and the curves will then be projected into 1927 by expressing the figures for the first 10 months of 1926

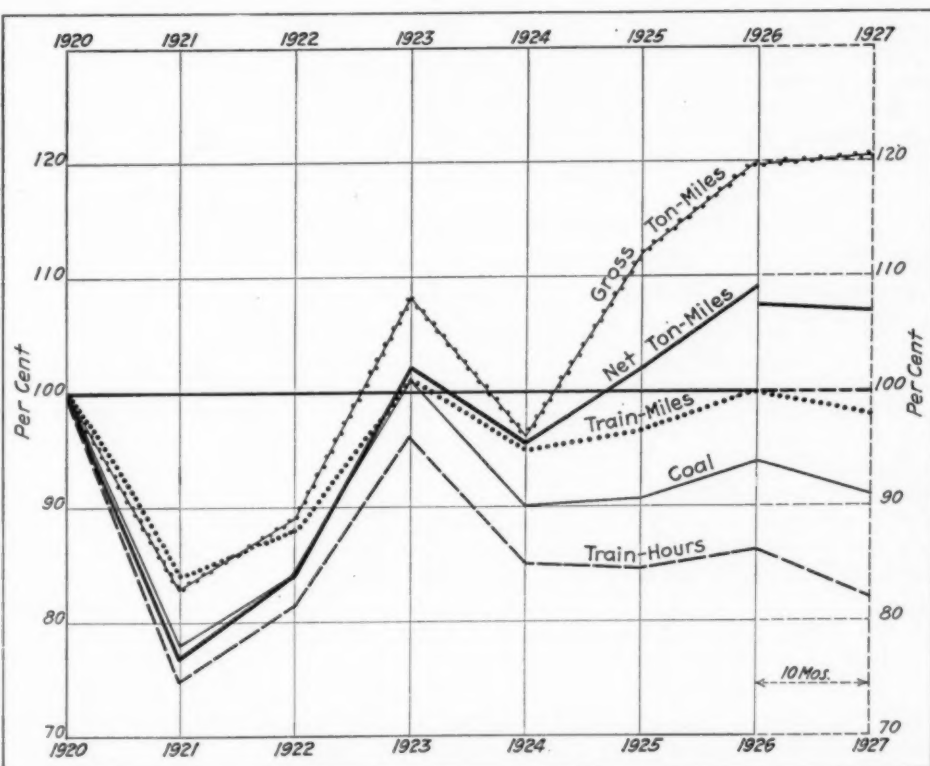


Chart 4—Comparison of Trend of Ton-Miles, Train-Miles, Train-Hours and Fuel Consumption, Class I Railroads, 1920 to 1927—Presented in Percentage of 1920
Figures—Train-Miles Show No Increase While Train-Hours Show Substantial Decrease

and 1927 in percentage of the figures for the first 10 months of 1920.

Chart 4 compares the curves of net ton-miles, gross ton-miles, train-miles, fuel consumption and freight train-hours, and is the most important chart of the five that will be shown. Using the figures for the complete year 1926, it shows an increase over 1920 of 9 per cent in net ton-miles, and an increase of 20 per cent in gross ton-miles. It appears, however, that this increase in train-miles, the increase in net and gross train-load (shown in more detail in Charts 6 and 7) being sufficient to accomplish this desirable result. As against this is the substantial decrease in freight train-hours, this decrease in 1926 under 1920 amounting to no less than 14.6 per cent. Putting these details together means

that in 1926 as compared with 1920, the carriers moved 20 per cent more gross ton-miles, or 9 per cent more net ton-miles, with the same number of freight train-miles but with 14.6 per cent less freight train-hours. It will

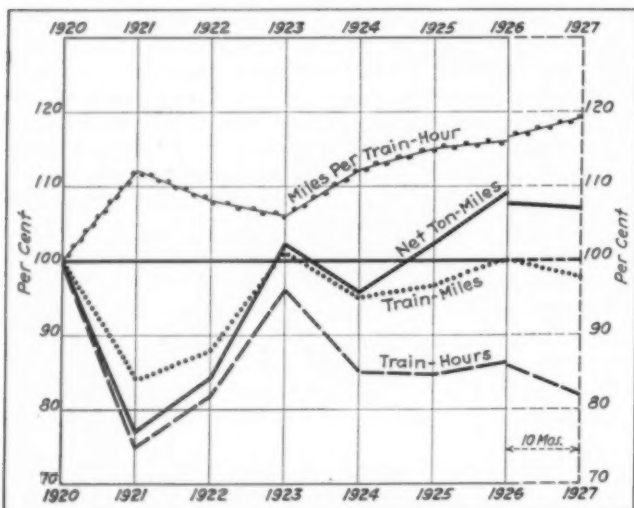


Chart 5—Increase in Train-Speed with No Increase in Train-Miles Has Resulted in Substantial Decrease in Train Hours. Figures Presented in Percentages of 1920 as 100.

also be observed that the increased traffic was handled with 6 per cent less fuel.

Train-hour Saving Made With Larger Train-loads

Charts 5, 6 and 7 develop these details further. Charts 6 and 7 show that the increase in the net tons per train or in the gross tons per train were in exactly the same percentage proportion as the increase in net and gross ton-miles, respectively. The decrease in train-hours is explained by the increase in the train-speed or miles per train-hour, the percentage of which, in 1926 over 1920, was 16 per cent. Curves of gross ton-miles per train hour and of net ton-miles per train-hour are shown on Chart 8. It appears that they have shown very substan-

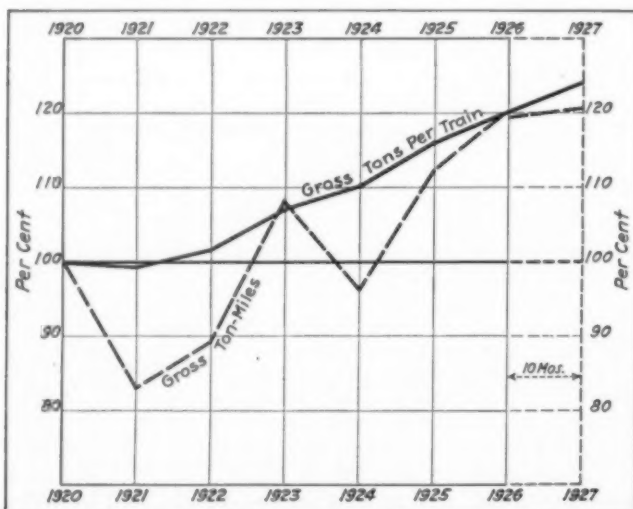


Chart 6—Showing How Increase in Gross Train-Load Has Kept Pace With Increase in Gross Ton-Miles Since 1920.

tial improvement which has been the resultant of the train-load and of the train speed.

One of the more important trends in railroad opera-

tion at the present time has been in the direction of higher freight train-speed. This is supposed to be desirable provided it can be effected without loss of train-load. Two important means are available to secure the desired result. One is the modern locomotive of the latest design, the character of which embodies a large increase in horse-power capacity, which accompanied by an increase in starting power enables a locomotive to haul heavier tonnage at higher speeds. The other method is automatic signals, with respect to which the effort is directed towards assisting in keeping the train in motion by avoiding or eliminating unnecessary delay. In either case, the requirements of efficiency demand that there be no reduction in the train loading. Inasmuch as there was a substantial increase in the average train-load in 1926 as compared with 1920, or in

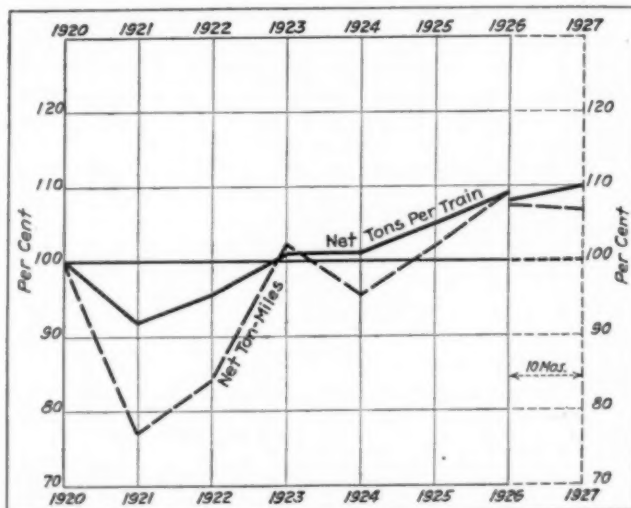


Chart 7—Comparing the Increase in Net Train-Load and Net Ton-Miles

1927 compared with 1926, it is apparent that the increase in speed or in ton-miles per train-hour has been secured without loss from the standpoint of loading.

The average speed of freight trains in the year 1926 was 11.9 miles per hour which compared with an average speed in 1920 of 10.3. The average for the first ten months of 1926 was 12 miles an hour, or a trifle over the average for the full year, but in the first ten months of 1927 there was a further increase to 12.3, this increase having been accompanied by a further increase in both the average gross and net train-load.

The Value of Saved Train-Hours

It is interesting to analyze the effect of this increase in speed from the standpoint of the reduction in the operating expenses of the railroads. If comparison is made as between 1926 and 1920, one can start with the fact that, while the traffic in 1926 was greater, the train-miles, due to the increase in train-load, were the same. The total of freight train-hours in 1920 was 61,500,864. The total in 1926 was 53,064,819. This was, as above noted, a reduction of 13.6 per cent, or in actual figures —8,436,045 freight train-hours. In other words, if there had been no increase in the freight train speed it would have required this number more freight train-hours to move the heavier freight trains of 1926 than actually were required.

Admittedly there are limitations in expressing this saving in dollars and cents. However, elaborate studies have been made to determine the cost of an hour of freight train delay. These were made by the Com-

mittee on Economics of Railway Signaling of the Signal Section, A. R. A., and were included in a report made at the March convention in 1924 which was abstracted in the *Railway Age* of April 12, 1924. The committee secured its data from the Interstate Commerce Commission's reports of freight and passenger train service unit costs. On the basis of the figures for the year 1922, it determined that to effect an increase in the average speed from 11.1 miles per train-hour to 12.5 miles on a 125-mile division, with the average con-

represented a saving of \$21.07, for each hour's delay saved by the speeding up of operation.

Estimated Dollar Savings

Unfortunately, this particular method cannot be followed in determining savings on the basis of the 1926 level of costs, for the reason that the unit cost report was discontinued by the Interstate Commerce Commission at the end of 1924. It would, however, seem sufficiently conservative to suggest that an hour of freight train delay might be worth on the present basis of costs, say, about \$15. Even if a figure as low as \$10 were taken as representing the value of the train-hours saved in 1926 as compared with 1920, the total saving would equal 8,436,045 times \$10 or in excess of \$84,000,000. This amount is equivalent to 3.8 per cent of the actual transportation expenses in 1926. The ratio of transportation expenses to total operating revenues for the year was 34.3 per cent. Had the saving of train-hours not been made and figuring the value of the saved train-hours at only \$10 each, the transportation ratio would have been 35.6 per cent. It is also worth noting that the \$84,000,000 would have represented a return of 6 per cent on an investment of no less than \$1,400,000,000, the size of which figure is indicated by the fact that it approximates double the amount of additions and betterments that actually were made by the carriers in 1926.

Conclusion

Irrespective of the dollars and cents figures, it appears that one of the most important phases of the improved operation of the carriers in the past four or five years has been the manner in which, as a result of the improved operation made possible by signals, by modern locomotives, or other means, they have increased the speed of their freight trains without loss of average train-load and the manner in which the increase in speed has been translated into substantial reductions in freight train-hours. The value of the money savings attains its chief usefulness in pointing out the merit of the present program. To attain their greatest value the calculations of the money savings should preferably be made on the basis of the conditions on particular operating districts or divisions.

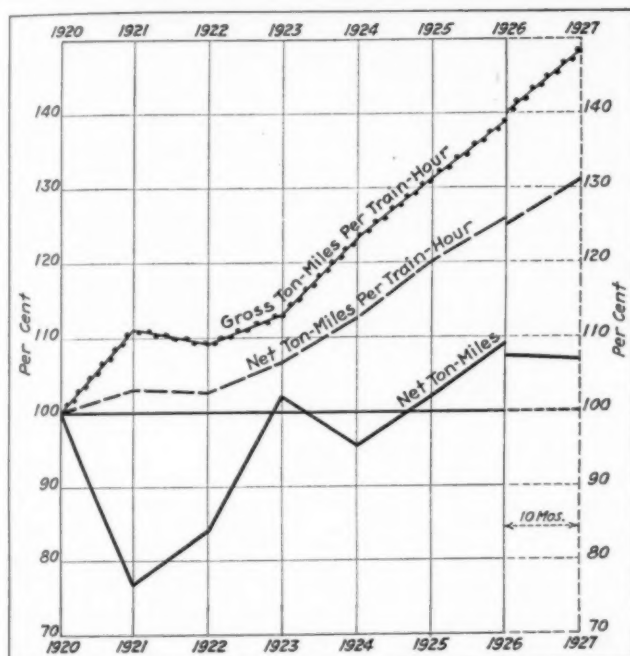
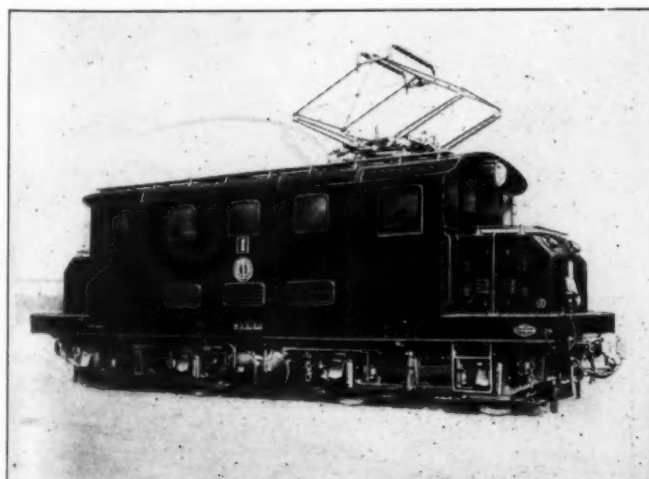


Chart 8—Showing How Increased Train-Load Combined with Increased Train-Speed Has Effected Marked Increases in Gross Ton-Miles per Train-Hour and in Net Ton-Miles per Train-Hour in Period 1920 to 1927.

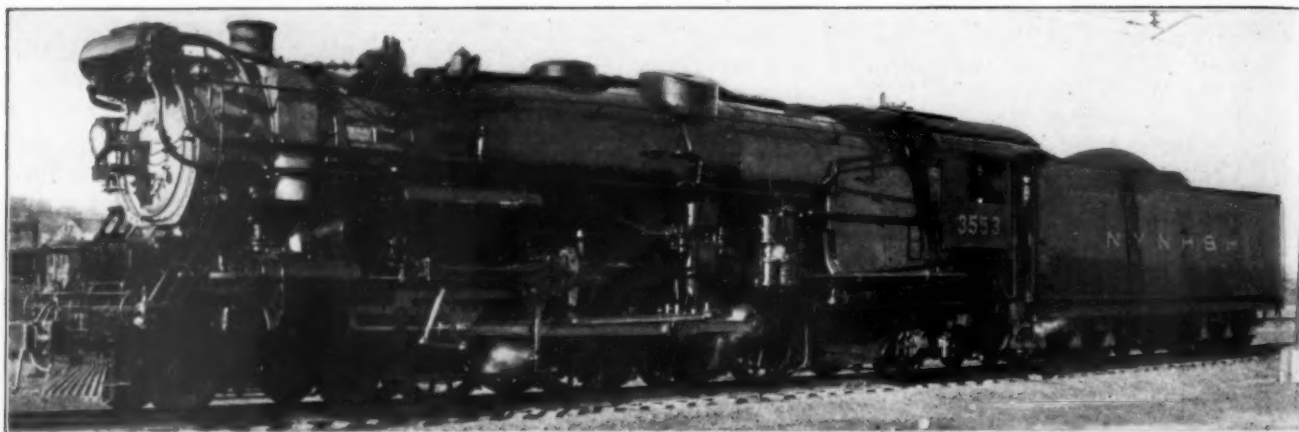
ditions of train-load and costs such as ruled for the roads as a whole in 1922, would result in a saving of $1\frac{1}{4}$ hours or \$26.34. This, the committee pointed out,

* * * *



Exterior View and Operator's Cab of Electric Locomotive Built in Japan

Two locomotives of the type shown were built by the Kawasaki Dock Yard Company, Kobe, Japan, for the Odawara Express Company for operation between Odawara and Tokyo, a distance of about 50 miles. The locomotives weigh 40 tons, and operate from a 1500-volt, d. c. trolley. They are each equipped with four, 150 HP., 750-volt motors, gear drive, 38-in. wheels, type 14 E.L. Westinghouse air brakes, two motor driven air compressors, and a motor generator set for lighting and control circuits. They are designed to haul a 200-ton train, on a 2.5 per cent grade at 15 miles an hour.



One of the New Haven 4-8-2, Three-Cylinder Locomotives Which Develop a Tractive Force of 71,000 lb.

New Haven Acquires Ten Three-Cylinder Locomotives

*Engines of 4-8-2 type equipped with McClellon fireboxes.
Bean smokeboxes and cast steel cylinders*

THE New York, New Haven & Hartford has received from the American Locomotive Company ten three-cylinder, 4-8-2 type, locomotives, designed for hauling heavy trains at high speed. These locomotives are unusual in that they are equipped with the McClellon water tube firebox, the Bean one-piece smokebox and cast steel cylinders.

The diameter and stroke of the cylinders is 22 in. by 30 in. with a boiler pressure of 265 lb., a driving wheel diameter of 69 in. and a weight on the drivers of 260,000 lb., these locomotives will develop a tractive force at 85 per cent cut-off, of 71,000 lb. They carry the highest boiler pressure and develop the greatest tractive force of any locomotive on the New Haven.

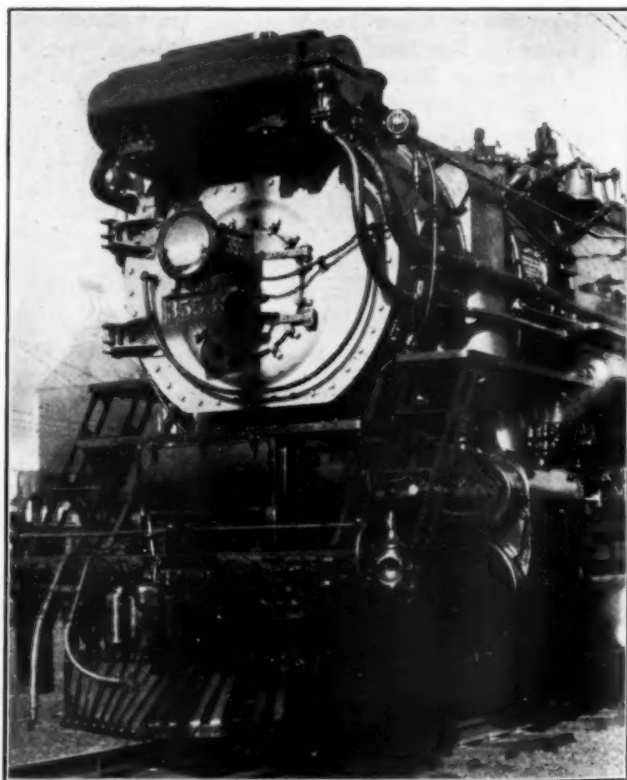
Increasing demand for expeditious handling of traffic on the New Haven has made greater speed in the movement of its freight essential. The new locomotives were designed to meet these conditions. They will pull, at passenger train speed, 100 loaded cars weighing 5,000 tons. It is planned to use this power in fast freight service between Maybrook, N. Y.—the New Haven's western gateway—and Boston, Mass., the longest freight train run in New England, a distance of 275 miles. The new power will replace the locomotives which have handled these runs for several years.

Changes Made in the McClellon Boiler

The locomotives are equipped with McClellon boilers, a general description of which was published on page 575, in the March 6, 1926, issue of the *Railway Age*. Modifications have been made, however, in these boilers over existing engines. The back tube sheet is made in two sections. The outer section consists of a ring flanged into the water side connecting to the third shell course, with an opening at the top flanged toward the fire side to receive the firebox drums. This construction is the same as on the previous engines of this type. However, instead of the tube section being integral as on the previous locomotives it is made in a separate piece, and joined to the outer ring by a

riveted joint, its flange being turned toward the fire side. No braces are used in the back tube sheet. This form of construction will, it is believed, provide for the necessary flexibility between the tube section and the barrel of the boiler, and also greatly facilitate the renewal of the back tube sheet.

Additional circulation has been provided for between the hollow mud ring and the barrel, through two



The Front End with Its Various Brackets Is Cast in One Piece

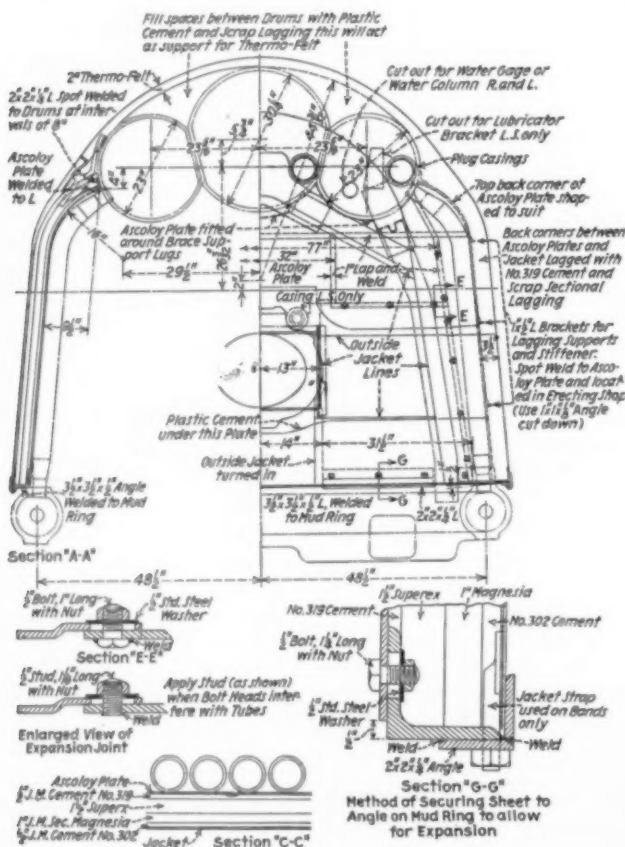
arrangement to secure a pleasing appearance. All the piping possible, including sand traps and piping has been placed under the jacket. Where piping could not be placed under the jacket, care has been taken to run the piping along horizontal and vertical lines as far as possible. All steam pipes and valves, as far as possible, have been kept outside the cab under a turret housing over the top of the boiler in front of the cab. The steam valves in the turret are operated by extension handles which pass back through the cab where they are arranged in a neat line across the top of the firebox on a control board with each handle clearly labeled. With the exception of the air and back pressure gages, all of the gages are mounted in a straight line arrangement on an instrument board.

Among the special equipment included on these engines are feedwater heaters, automatic train control, force feed lubricators, air operated whistles, automatic bell stops, soot blowers, stokers and multiple throttles.

As on the previous locomotives the stoker engine is mounted on the front of the tank. A folding door in

Service	Fast freight
Cylinders, diameter and stroke	3 cyl., 22 in. by 30 in.
Valve gear, type	Walschaert
Valves, piston type, size	11 in.
Maximum travel	6 in.
Outside lap	1 1/16 in.
Exhaust clearance	3/16 in.
Lead in full gear	3/4 in.
Cut-off in full gear, per cent.	85
Weights in working order:	
On drivers	260,000 lb.
On front truck	58,500 lb.
On trailing truck	60,500 lb.
Total engine	379,000 lb.
Tender	288,500 lb.
Wheel bases:	
Driving	19 ft. 9 in.
Rigid	12 ft. 2 in.
Total engine	42 ft. 3 in.
Total engine and tender	85 ft. 4 in.
Wheels, diameter outside tires:	
Driving	69 in.
Front truck	33 in.
Trailing truck	44 in.
Journals, diameter and length:	
Driving, main	11 1/2 in. by 14 in.
Driving, others	10 1/2 in. by 14 in.
Front truck	6 1/2 in. by 12 in.
Trailing truck	9 in. by 14 in.
Boiler:	
Type	McClellon
Steam pressure	265 lb.
Fuel, kind	Bituminous
Diameter, first ring, inside	79 3/4 in.
Firebox, length and width	120 in. by 85 in.
Arch tubes, number and diameter	4—3 in.
Combustion chamber length	68 in.
Tubes, number and diameter	29—2 3/4", 14—3 1/2"
Flues, number and diameter	170—3 1/2 in.
Length over tube sheets	19 ft. 8 in.
Grate area	70.8 sq. ft.
Heating surfaces:	
Drums	96 sq. ft.
Combustion chamber tubes	95 sq. ft.
Firebox side tubes	145 sq. ft.
Firebox back tubes	35 sq. ft.
Firebox back section	2 sq. ft.
Arch tubes	27 sq. ft.
Firebox tube sheet and throat	51 sq. ft.
Total firebox	451 sq. ft.
Boiler tubes and flues	3,634 sq. ft.
Total evaporative	4,085 sq. ft.
Superheating	1,756 sq. ft.
Combined evaporative and superheating	5,841 sq. ft.
Tender:	
Style	Water bottom
Water capacity	16,000 gals.
Fuel capacity	18 tons
General data estimated:	
Rated tractive force, 85 per cent.	71,000 lb.
Weight proportions:	
Weight on drivers ÷ total weight engine, per cent	68.5
Weight on drivers ÷ tractive force	3.65
Total weight engine ÷ comb. heat. surface	64.9
Boiler proportions:	
Tractive force ÷ comb. heat. surface	12.1
Tractive force × dia. drivers ÷ comb. heat. surface	841
Firebox heat. surface ÷ grate area	6.37
Firebox heat. surface, per cent of evap. heat. surface	11.2
Superheat. surface, per cent of evap. heat. surface	42.9

* * *



A Cross-Section of the Firebox and Some of the Details Showing How the Lagging is Applied

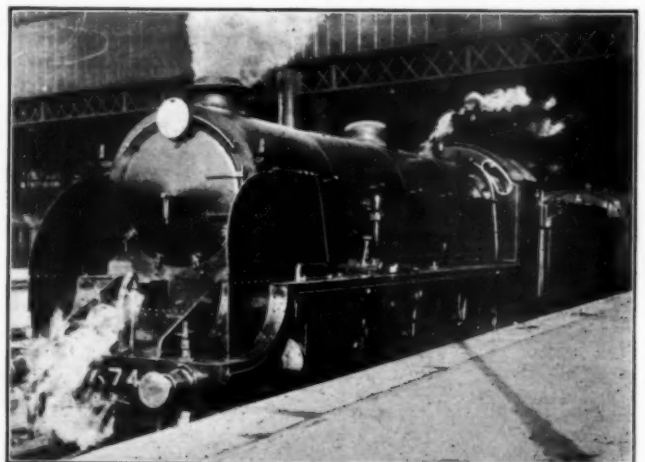
the side of the tank provides access to the engine compartment for inspection and repairs.

The tenders are of the rectangular type, having a capacity of 18 tons of coal and 16,000 gallons of water. They are carried on Commonwealth six-wheel trucks, fitted with the clasp brakes.

Details of dimensions, weights and proportions are given in the table.

Table of Dimensions, Weights and Proportions of the New Haven 4-8-2 Type Locomotives

Railroad	New York, New Haven & Hartford
Type of locomotive	4-8-2



Acme Photo

The "Maid of Astolat" of the Southern (England) with Deflectors Applied to Force Smoke Upward When Locomotive Is in Motion

Central of New Jersey

Combines characteristics of originating, bridge and terminal carrier—Very conservative capitalization

NOTWITHSTANDING a decrease of nearly a million and a half dollars in its total operating revenues, the Central of New Jersey has reported for the year 1927 net income after interest and other charges about \$1,100,000 greater than it reported in 1926. The 1927 net income totaled \$5,472,604 and was equivalent to \$19.94 per share of the company's outstanding capital stock. This compared with net income in 1926 of \$4,368,760 or \$15.92 per share, and with the 1925 net income of \$3,596,117, or \$13.11 per share. The company pays 12 per cent dividends.

The Central of New Jersey was one of the few railroads that reported larger net income in 1927 than in 1926. It was the only one of the anthracite coal-carrying roads that showed an improvement in this respect.

Explanation of 1927 Improvement

The explanation of the improvement in net income in 1927 following a decrease in gross seems to lie in the fact that the year was more of a normal year for the road than the years immediately preceding it. In 1925, for example, the road's earnings were affected by the long-drawn out suspension in the anthracite coal industry. The strike continued into the earlier months of 1926 and, upon the resumption of mining, return to normalcy was delayed by a falling off in the demand for domestic fuel as a result of mild weather. In 1926, also, the road included in its operating expenses several important adjustment items. These included substantial charges for retirements of equipment and retirement charges in connection with the construction of the company's new bridge across Newark Bay. An unusually large amount was charged for equipment depreciation as a result of a change in methods of accounting which required an adjustment of charges for previous years. Some similar adjustments, notably with respect to taxes, occurred in 1927, but they were of considerably less importance.

1927 Earnings

A comparison of the earnings in 1927 with those in 1926 follows:

	1927	1926	Increase or Decrease
Average mileage operated	690	690	
RAILWAY OPERATING REVENUES	\$58,745,712	\$60,171,118	—\$1,425,406
Maintenance of way	5,460,521	6,777,562	—1,317,041
Maintenance of equipment	12,863,862	14,408,216	—1,544,354
Transportation	22,725,529	22,517,902	207,627
TOTAL OPERATING EXPENSES	43,344,247	45,993,621	—2,649,374
Operating ratio	73.8	76.44	—2.6
NET REVENUE FROM OPERATIONS	15,401,465	14,177,497	1,223,968
Railway tax accruals	3,738,302	4,780,862	—1,042,560
Railway operating income	11,649,192	9,318,825	2,330,367
Equipment rents, net Dr.	918,445	821,128	97,317
Joint facility rents, net Dr.	347,094	446,162	—99,068
NET RAILWAY OPERATING INCOME ..	10,383,653	8,051,535	2,332,118
Non-operating income	1,684,808	2,339,617	554,809
GROSS INCOME	12,068,461	10,391,152	1,677,309
Rent for leased roads	*	2,343,873	
Interest on funded debt	*	3,072,608	
TOTAL DEDUCTIONS FROM GROSS INCOME	6,595,857	6,022,392	573,465
NET INCOME	5,472,604	4,368,760	1,103,844

* Not yet available.

The Central of New Jersey operates a total of 690

miles of line. Its most important mileage includes its line extending from tidewater at Jersey City across New Jersey to Wilkes-Barre, Scranton, etc., in the anthracite coal fields of eastern Pennsylvania. In addition, it also operates a considerable mileage in the central part of New Jersey extending both north and south of its east-and-west line. The road performs an unusual variety of functions, and combines the characteristics of an originating line, a bridge line and a terminal carrier. It differs from the other important anthracite roads, such as the Lackawanna or the Lehigh Valley, the latter of which its line to the coal fields closely parallels, in that it has no western outlet beyond the anthracite coal areas. It is similar to its parent company, the Reading, in that its tonnage of bituminous coal is about as large as its tonnage of anthracite. Like the other anthracite carriers, it has built up in recent years a large tonnage of manufactured and miscellaneous products.

Anthracite

The road serves as an originating carrier with respect to its anthracite. The company was formerly the owner of the Lehigh & Wilkes-Barre Coal Company, control of which was disposed of in 1921 as a result of the Supreme Court's decision requiring the segregation of the coal properties of the Reading. The larger part of the anthracite which the road originates moves to New York and to the extensive suburban area served by the Jersey Central in the New York district.

Bituminous

It is with reference chiefly to the bituminous coal that the Central of New Jersey serves as a bridge carrier. Normally, the volume of bituminous and anthracite carried is about the same. In 1926, there was a difference of less than a thousand tons in the tonnage of each, so that the percentage of each to the total revenue tonnage—22.62—was the same. The bituminous is received from the Reading which gets it chiefly from the Baltimore & Ohio at Shippensburg, Pa. Such of this coal as reaches the Jersey Central is turned over to it at Allentown, Pa., some for movement to the Central's own consuming territory and most of the remainder for movement to Phillipsburg, Pa., where it is turned over to the Lehigh & Hudson River of the Lehigh & New England, for movement via the Poughkeepsie Bridge route into New England.

Of equal or greater importance than the foregoing is the fact that the Central of New Jersey gives the Reading and the Baltimore & Ohio their entrance into New York. Both use the Central from Bound Brook, N. J., to Jersey City. There is an agreement whereby the trains of the two larger roads operate over the tracks of the Central with their own power and crews. This applies more particularly to the passenger business. The Reading has extensive freight terminals in the New York district at Port Reading which may be reached without use of the Central tracks, while the Baltimore & Ohio has its extensive terminal development on Staten Island which is reached by the use of the Central for only a few miles between Bound Brook and Elizabeth Junction.

Interest of Baltimore & Ohio and Reading

The interest of the Baltimore & Ohio and the Reading is maintained through the ownership of stock. The Reading owns a majority of the outstanding stock of the Central of New Jersey, while the Baltimore & Ohio owns an equal share with the New York Central of a controlling interest in the Reading. The Reading some years ago held a lease of the Central of New Jersey but had to give it up. Later it acquired a majority interest, instead. This majority control was brought in question in the Reading's coal segregation case. The Department of Justice succeeded in having the Reading's interest declared illegal, but the courts finally decided to leave the situation in abeyance by requiring that the Central stock be placed in the hands of trustees until that time when the Interstate Commerce Commission had determined the allocation of the properties in the consolidation program. The general expectation is that the interest of the Baltimore & Ohio in the Reading and that of the latter in the Central of New Jersey will eventually become more decisive rather than otherwise.

It was noted above that the Central of New Jersey carried a large tonnage of manufactured and miscellaneous products. The percentage of this traffic to total tonnage in recent years has averaged about 30 per cent. Of the manufactures and miscellaneous commodities, about one-half are originated on the Jersey Central lines. Refined petroleum and its products and cement are the two leading items.

Physical Improvement

The Central of New Jersey has made a marked improvement in its physical characteristics and in its operation in recent years. When the Lehigh & Wilkes-Barre Coal Company was sold, the plan was adopted of applying the proceeds to additions and betterments. The proceeds totaled \$32,500,000. To the end of 1926, \$24,704,092 of this amount had been used. The improvements have included the construction of a new four-track concrete and steel bridge across Newark Bay, replacing a two-track wooden structure. The new bridge cost about \$14,000,000. In addition, several important grade crossing elimination projects have been undertaken, such as at Somerville, N. J., and Perth Amboy. Similar projects are planned at Cranford and Elizabethport. Another important project was the extension of four-track mileage beyond Bound Brook to Somerville. These improvements seem to be of a sort, unfortunately, that will not greatly add to the road's ability to secure greater traffic or earn more net income.

Conservative Capitalization

The Central of New Jersey is, of course, protected in this particular respect by its very conservative capital structure. Its stock outstanding totals \$27,436,800 and its funded debt on December 31, 1926, was \$63,658,500. The total capitalization of \$91,095,300 compared with a total investment in road and equipment alone at the end of 1926 of \$158,509,686. At the same time, there was a corporate surplus, mainly in the form of "Additions to property through income and surplus" of \$67,784,406. The profit and loss balance was \$18,630,837, making a total equivalent to about \$315 per share of common stock outstanding.

Operating Improvement

The operating statistics of the Central of New Jersey reflect the fact that its terminal characteristics are of predominating importance. This is indicated by an average haul on its traffic of but 69 miles, or its car-miles per day of approximately 14. It also appears

that the difficulties in the anthracite coal industry have prevented the road from having a satisfactory increase in its freight traffic in recent years. Thus, in 1926, at present the latest year for which figures are available, as compared with the year ended June 30, 1916, the revenue ton-miles increased only 10 per cent. The increase in the same period for the roads in the Central Eastern region, in which the Jersey Central is reported, was 19 per cent, while that for the roads of the country as a whole was 30 per cent.

The present tendency in railroad operation seems to be in the direction of faster train-movement made without loss from the standpoint of the economies of heavier train-loading. Knowledge of this fact enables the analyst to make a ready check of operating improvement by comparing the traffic, the train-miles and the train-hours. Comparison of the figures for the first 11 months of 1927 with those for the same period of 1920 will show that the Central of New Jersey has effected a particularly interesting improvement. Thus the net ton-miles showed an increase of 9 per cent. Because of an increase in the net tons per train from 691 to 910, or 32 per cent, this additional amount of tons was handled with 17 per cent less train-miles. The Central does not move its trains as fast as does the average road, but in 1927 its average freight train speed was 9.9 miles per train-hour, whereas, in 1920 it had been 8.5; this is an increase of 16½ per cent. The result of the road's ability to move 9 per cent more ton-miles with 17 per cent less train-miles combined with its ability to move the smaller number of trains faster, was that the 1927 freight train-hours were 29 per cent less than in 1920. Furthermore, in the same period the road has increased its gross ton-miles per train-hour no less than 70 per cent and its net ton-miles per train-hour no less than 53 per cent.

The road had an operating ratio in 1927 of 73.8 and a transportation ratio of 38.7. Its ratio of net railway operating income to total operating revenues was 17.7 per cent as compared with the average for all roads of 17.5.

OF THE MOTOR CAR ACCIDENTS at highway crossings on the Pere Marquette during the 42 days ending on January 22, 52 per cent (12 out of 23) were cases in which the automobile ran into the side of a train. These accidents caused two deaths and 29 injuries; and seven of these injuries were serious.

* * *



On the B. & A. Near Riverside, Mass.



Southbound Train Passing Signal 4993



Northbound Train Passing Signal 5018

Trains Directed by Signals

Missouri-Kansas-Texas eliminates delays and saves \$6,000 a year by eliminating train orders on five miles of single track

DURING periods of heavy traffic, one of the most congested sections on the Missouri-Kansas-Texas has been the five-mile section of single track from Muskogee, Okla., north to Wybark, at which point a line diverges to Tulsa. A change in the signaling in this area, to eliminate written train orders and direct train movements by signal indication, has facilitated train movements, eliminated many train stops, saved fuel, reduced penalty overtime, and released the operators previously required at Wybark. A conservative estimate of the saving effected is \$6,000 a year.

Volume of Traffic and Character of Line

The passenger traffic on this section includes five through trains and three for Tulsa each way daily, while the freight movement includes four through freight trains and a local each way daily, and when business is heavy several more through trains each way. Therefore, a total of from 13 to 18 trains are handled in each direction on this section daily. The through freight trains handle from 3,200 to 4,500 tons.

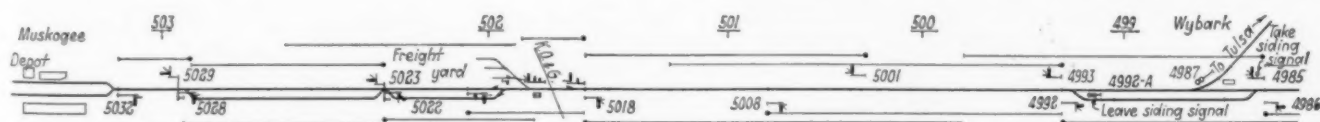
Delays With Train Order Operation

The Muskogee freight yard extends from the station north to the interlocking at the crossing of the Kansas, Oklahoma & Gulf, 1.8 miles. From this crossing the line descends on a 0.5 per cent grade for two miles to the Arkansas River bridge and then continues to descend on a 0.7 per cent grade for 2,000 ft. and from that point to Wybark on a 0.2 per cent grade. The cost of a new bridge over the Arkansas River has been the principal factor in delaying any consideration of second track in this section.

With the old method of operation by time-table and train orders, southbound trains were usually required to stop at Wybark and, having stopped, were often seriously delayed waiting to get orders to go on into the yard, because of Tulsa branch trains and other trains that were due. Northbound trains leaving Muskogee yard received orders and clearances at the yard office at the south end of the yard. There were no means of determining whether the head end of the train, which was about a mile from the yard office, would be coupled up and ready to pull out by the time the conductor got down to the train with his orders; while after a northbound train in the yard was given its orders there was no way to get in communication with the crew again, regardless of whether the train was leaving or was not yet ready to pull out.

In the meantime a southbound train, arriving at Wybark, where its orders ran out, was required to stop. Southbound trains were inferior by both class and direction and were usually, therefore, working against northbound trains under train orders. A southbound train which stopped at Wybark had no right to proceed without orders and no orders could be issued when a northbound train had orders to proceed. Therefore, many southbound trains were delayed from 30 min. to an hour or more at Wybark. Furthermore, when stopped at Wybark a southbound train was at the foot of the grade, and the starting of a heavy train and pulling it up this grade without a "run for the hill" resulted in a heavy waste of fuel, to say nothing of the delays.

The solution of the problem, therefore, was to evolve some system to keep these heavy southbound trains coming past Wybark and into the yard without stopping;



Track and Signaling Plan of Section in Which Train Movements Are Directed by Signal Indication

and to hold all other trains, regardless of time-tables, rights by direction, etc. The only way to do this was to abolish the train orders and time-table rights and to direct train movements in this section by signal indication.

Control Located at Interlocking Tower

For method of train operation, this area is naturally divided into two sections, one extending from the north end of Wybark to the interlocking and the other from the interlocking to the Muskogee station. It was decided, therefore, to control the signals entering each end of each of these two sections by a set of desk lever controllers located in the tower. The dispatcher directs the leverman as to the moves to be made. For example, the southbound signal, No. 4993, at the south end of the passing track at Wybark, and the northbound signal, No. 5018, at the north end of the interlocking are controlled by one lever which, when thrown to the right, causes signal No. 4993 and all the southbound signals to go to clear, and signal No. 5018 and all the northbound signals to go to danger. When the lever is thrown to the left the reverse is true. The clear indication of signal No. 4993 gives a train authority to proceed from Wybark. While the train is coming up the hill the leverman lines up for it to enter the yard without stopping, and in the meantime holds all opposing trains. The fact that the line-up can be arranged definitely for a clear route through Wybark, up the hill and into the yard without a stop, gives an engineman confidence in making a "run" for the hill, which permits the entire movement to be made in six or seven minutes, thus getting these heavy trains out of the way quickly, whereas before, many of these trains were held out at Wybark with long delays.

In order that the towerman may know the exact position of each train, an illuminated track diagram with lights is provided to indicate the sections occupied. By this diagram and annunciators, the towerman knows when a southbound train is coming in sufficient time to line up the through route.

How Other Movements Fit In

Control of the movement of all trains that might interfere with the route described above is also placed in the hands of this leverman. A two-unit color-light signal, No. 4987, was placed on the line leading from Tulsa to the main line. After a train from Tulsa has made the station stop at Wybark, the engineman pulls up on a clearing section 150 ft. in advance of the signal, which causes the signal to indicate red and also rings

an annunciator in the tower. When the towerman can arrange a through route for the train to move into Muskogee he clears the signal, which gives the crew the right to throw the switch and proceed onto the main line toward Muskogee.

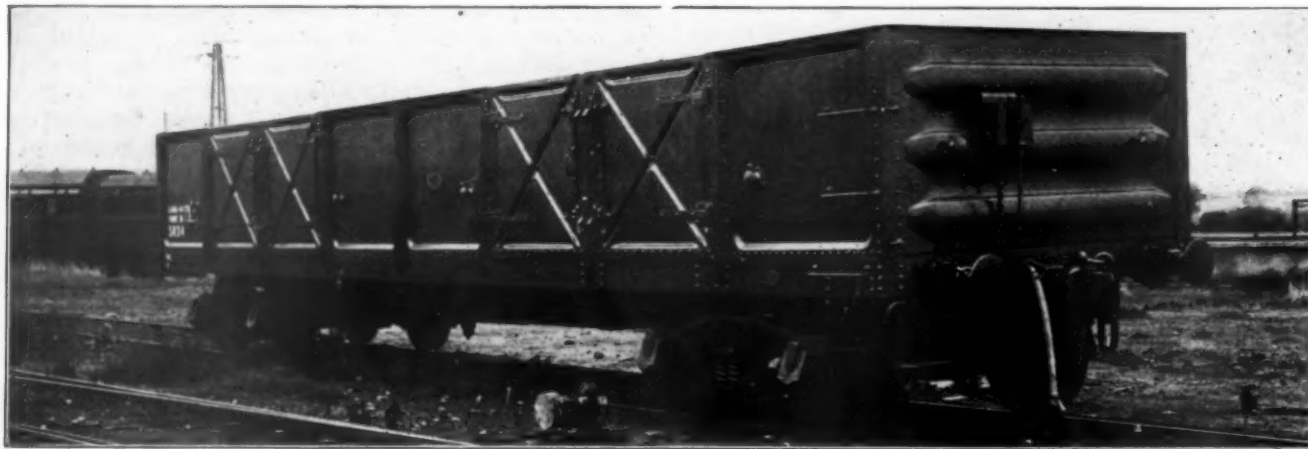
The passing track at Wybark holds only 70 cars and is therefore used by passenger trains only. As this track is in the zone controlled by signal indication, a take-siding signal, consisting of a single light unit, was placed on signal No. 4985, and when the leverman wants a southbound train to take siding, this signal is placed at stop and the take-siding signal indicates red. Having entered this siding, the train pulls down to the leave-siding signal, No. 4992A, which then indicates red until the leverman is ready for the train to pull out, at which time he throws a lever that causes the indication of the leave-siding signal to change to yellow, giving the crew authority to throw the switch and pull out on the main line toward Muskogee.

Northbound freight train movements out of Muskogee yard are made out of the yard lead on a switch to the main line under interlocking protection to signal No. 5018, which gives authority to proceed to Wybark. When passing the interlocking tower they pick up train orders effective from Wybark north.

Freight trains enter and leave the yard at the interlocking; therefore, the single track main line from the tower to signal, No. 5032, at the north end of the passenger station, is used principally by passenger trains. Signal No. 5032 is controlled by the towerman and a clear indication is authority for a train to proceed northward out of the station to the interlocking plant. Ordinarily the passenger trains pull out on time without delay, but in case the leverman sees that he can bring a heavy southbound train from Wybark into the yard, he does not hesitate to hold the passenger train at the station a few minutes and then let it pull down to the interlocking about the time the freight train enters the yard. Passenger trains proceed from the interlocking to Wybark on the indication of Signal No. 5018, the same as freight trains do. Passenger crews get orders at the Muskogee station effective from Wybark north.

This method of operating trains by signal indication in this area has been in service since July 24, 1925, and has proved highly satisfactory.

Automatic signals were in service in this territory previously, so that the only new signals required were the take-siding and leave-siding signals and signal No. 4987 for leaving the Tulsa line. The additional signals, lever controllers, extra wiring and the labor to make the changes cost \$6,000, which was saved the first year.



An Australian Gondola of 42 Long Tons Capacity

Operating the Country's Largest Unified Terminal*

Terminal Association gives 1,400 industries on its tracks access to 28 railroads

By Thomas M. Pierce

Vice-President and General Counsel, Terminal
Railroad Association of St. Louis

THE Terminal Railroad Association of St. Louis, Mo., jointly owned by 14 trunk line railroads, today comprises the largest and most complete system of unified terminals in the world. Its resources, facilities and activities serve the people of the St. Louis district through the annual handling of more than 4,500,000 freight cars and 650,000 passenger cars.

The physical properties owned and operated by the Terminal Association include two bridges across the Mississippi river, the Eads and the Merchants; the Union station, with its 32 parallel tracks; used by all railroads entering St. Louis; a station at the foot of the Eads bridge for the accommodation of travelers desiring to leave the city from down town; six belt lines circling and extending throughout the industrial districts of St. Louis and East St. Louis and connecting with 28 railroads. In all the Association has more than 400 miles of track.

Five yards are maintained for the storage and care of passenger train equipment, accommodating last year 50,854 incoming passenger trains and 40,461 outgoing passenger trains. In interchange the Association handles annually more than 2,500,000 loaded freight cars and more than 2,000,000 empty freight cars. From its own tracks it directly serves about 1,400 industries and industries not located on its tracks are served by 30 public team tracks located in widely separated localities of the manufacturing district. In 1927 the Association loaded and unloaded more than 250,000 cars for 50 of the largest industries of St. Louis and the Cupples station, a part of its facilities, provides over 2,000,000 sq. ft. of warehouse space for housing wholesale, jobbing and manufacturing business. Classification yards are located at 10 different points, with a capacity of 20,000 cars. It serves the less than carload freight stations of 12 trunk line carriers. The magnitude of its investment is more strikingly indicated when it is shown that the Association is the largest local tax payer and pays annual taxes in excess of 1,500,000.

No Congestion at St. Louis

Through the medium of this Association passengers and freight are handled with remarkable precision and dispatch. No other large city in the United States can equal this record. When other places are congested with freight cars, St. Louis keeps its local and through traffic moving. The Terminal Railroad Association is accountable for this satisfactory condition. The Interstate Commerce Commission has spoken approvingly of this situation in these words:

"Switching charges in St. Louis are the lowest in the United States. Switching on all classes of business is absorbed by the carrying line, except on the limited traffic with near-by towns where the through rates do

not afford sufficient revenue to enable the carriers to take up these charges. More than 80 per cent of the switching charges on St. Louis traffic are paid by the railroads out of the through rates."

The railroads that jointly own the stock of the Association are sponsors and guarantors of its bonds and other obligations. Any other common carrier may have the immediate and full use of all the service, switching facilities, team tracks and other accommodations upon exactly the same terms and conditions as any one of the proprietary lines. With such an open door policy in force the business men of St. Louis have been permitted immediately to reach any new territory that may be opened up by new lines without the delay incident to the development of terminals.

The Municipal Bridge Project

The City of St. Louis has spent over \$6,500,000 in the construction of the Municipal bridge, a combined highway and railway structure, and is proposing to spend \$1,500,000 more for another approach, in order, as it is claimed, to foster and promote terminal competition so that two small switching companies, one in Illinois and the other in Missouri, may use this bridge in trans-Mississippi service and compete with the Terminal Railroad Association for freight and passenger business. To attain any degree of efficiency these small switching companies must purchase more locomotives, acquire additional classification yards, freight stations, and storage and unloading yards—entailing the expenditure of many millions of dollars. A reasonable return on this investment must be paid by the public which means higher terminal charges resulting from duplication in the cost of terminal facilities, as well as duplication of engine movements, labor and the keeping of records.

At this time the Terminal Railroad Association has enough locomotives to handle existing and prospective traffic adequately for many years. Each of its specially built engines can transport and handle over 125 cars. If these cars were split up into several trains handled by competitive companies the cost would obviously be increased, and it has been the announced purpose of the Interstate Commerce Commission to require that terminal services be performed as expeditiously and as cheaply as possible. The Commission has repeatedly advocated the St. Louis plan of having one agency perform all terminal services for all the trunk line carriers. Every student of this subject is in agreement, and all could not be wrong.

The profit in railroads should be made out of the trunk line haul, while the switching, hauling, assembling and delivering of passenger and freight traffic should be performed at cost by a terminal company. To this end the Association has created and it has, since 1889, adequately and efficiently served all the trunk line carriers at cost and without discrimination. It has never paid,

* Abstract of an address presented before the St. Louis Railway Club on February 10.

and never will pay, a dividend, and under the structure of its formation can only earn sufficient to meet operating expenses and to make requisite improvements and extensions commensurate with the commercial and industrial growth and development of the community it serves.

Definite Traffic Zones for Rate Making

While St. Louis and East St. Louis comprise a single industrial district, and, except on traffic originating nearby, principally coal, enjoy the same passenger and freight rates from all outside points, this industrial district has been divided into different traffic zones for rate making. It would, of course, be desirable to the users of coal in St. Louis if coal could be delivered at the same price as in East St. Louis, but this can never be because of certain insurmountable obstacles and geographical reasons.

The commission has pointed out that "the service rendered by the transportation agencies in the through routes from the mines to final points of delivery is greater, both from the standpoint of mileage and of expense per mile, on the St. Louis coal than on the East St. Louis coal. The service beyond East St. Louis on the St. Louis coal is over expensive bridges and through a congested metropolitan district, where the cost of terminal acquisition and upkeep is very great."

The East St. Louis-St. Louis district is territorially so large that coal mined only eight miles from East St. Louis in Illinois cannot be delivered at the same rate to all parts of this district, even though St. Louis and East St. Louis were not separated by the Mississippi river. The East St. Louis district is an area of 30 square miles, while the St. Louis district is an area of 75 square miles. The average delivery haul in East St. Louis is 3.5 miles and in St. Louis 8.5 miles, while there is an additional river haul of 2 miles. The bridges to be crossed cost millions of dollars, sufficient to build several hundred miles of railroad tracks, so that for rate making purposes East St. Louis and St. Louis are hundreds of miles apart. Some people thought that when the city built the Municipal bridge its existence would affect the rate situation but the Commission has contended that the bridge has little effect upon the rates.

This Association and the railroads have been criticized for imposing an "arbitrary" charge for hauling coal across the river. The word "arbitrary" is unfortunately used because to practically everyone it means something done, not based on actual facts, nor justified by reason. When the ferry companies, prior to 1874, charged 60 cents per ton for merely hauling coal across the river, there was no complaint, and everyone seemed satisfied. The Eads bridge was placed in operation in 1874 to lower those charges from 60 cents to 30 cents per ton. This reduction was indeed arbitrary, because it was based on no facts or figures, nor justified by experience, but it was wholly in the interest of the public. After the creation of the Interstate Commerce Commission in 1887 the charge on coal was investigated from time to time and that rate has represented for a number of years the result of a study predicated upon the cost of service, the value of the facilities and comparisons with other river crossings. Today this charge is in no sense arbitrary, but it is the matured judgment of the Commission, which is now again reviewing the matter.

Others have criticized the Association as a monopoly. Since all the rates of the terminal are fixed by the Commission and not by the Association, manifestly it is not a monopoly and cannot under the law become a monopoly.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading during the week ended February 11 amounted to 906,009 cars, a decrease of 56,593 cars from the corresponding week of 1927 and of 11,616 cars from 1926. Loadings of grain and grain products and livestock were larger than a year ago. Coal led a decline in other commodity totals. Coal loading amounted to 170,307 cars, as compared with 212,486 in the corresponding week of last year. Loadings of districts were smaller, with one exception, than last year. There was a small increase in the Northwestern district. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week ended Saturday, February 11, 1928.

Districts	1928	1927	1926
Eastern	207,068	219,418	201,609
Allegheny	181,343	198,607	183,556
Pocahontas	51,480	60,326	55,954
Southern	144,528	159,348	155,530
Northwestern	117,905	113,548	116,381
Central Western	130,545	137,006	129,083
Southwestern	73,140	74,349	75,512
Total Western Districts	321,590	324,903	320,976
Total All Roads	906,009	962,602	917,625
Commodities			
Grain and Grain Products	46,082	41,342	43,658
Live Stock	32,816	28,027	29,769
Coal	170,307	218,486	171,909
Coke	11,405	12,399	18,883
Forest Products	68,249	70,968	76,148
Ore	8,239	11,104	10,023
Mdse. L.C.L.	250,356	252,970	247,844
Miscellaneous	318,555	327,306	319,391
February 11	906,009	962,602	917,625
February 4	926,204	965,664	914,491
January 28	902,832	943,879	925,696
January 21	884,095	936,160	921,643
January 14	906,734	942,731	931,735
Cumulative total, 6 weeks	5,279,936	5,684,926	5,518,812

The freight car surplus during the period ended January 31 averaged 403,792 cars, as compared with 421,392 cars on January 23. The total included 182,001 box cars, 169,463 coal cars, 23,583 stock cars and 14,614 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended February 11 totalled 65,965 cars, an increase over the previous week of 994 cars and an increase of 4,583 cars over the same week last year.

	Total cars loaded	Total cars rec'd from connections
TOTAL FOR CANADA		
Feb. 11, 1928.....	65,965	41,710
Feb. 4, 1928.....	64,971	39,571
Jan. 28, 1928.....	62,104	36,679
Feb. 2, 1927.....	61,382	40,533
CUMULATIVE TOTAL FOR CANADA		
Feb. 11, 1928.....	374,766	219,092
Feb. 12, 1927.....	354,655	216,574
Feb. 13, 1926.....	329,779	207,470

BECAUSE of a marriage boom in Bengal and the northwest provinces of India last spring lucky stockholders in the railroad company serving that area are reaping an ordinary dividend of 18 per cent, according to the New York Herald-Tribune.

A favorable marriage season during last April and May was described at the annual meeting of the Bengal & Northwestern Railway Company as having been mainly responsible for an increase of 1,743,007 passengers compared with 1926.

Small railway ownership in supply houses seen in few reports made under anti-trust law

THESE are relatively few cases where the relations of buyer and seller in the purchasing of railway materials and supplies are complicated by an officer's financial interest in the supply company, according to the reports filed by the railroads with the Interstate Commerce Commission in compliance with the Clayton Anti-Trust Act. This Act, passed by Congress in 1914, provides in Section 10 that "no common carrier engaged in commerce shall have any dealings in securities, supplies or other articles of commerce, or shall make or have contracts for construction or maintenance of any kind to the amount of more than \$50,000 in the aggregate in any one year with another corporation, firm, partnership, or association, when the carrier shall have upon its board of directors or as its president, manager or its purchasing or selling officer or agent in the transaction any person who is at the same time a director, manager or purchasing or selling officer, or who has any substantial interest in the other corporation, firm, partnership or association unless and except such purchases shall be made from or such dealings be with the bidder whose bid is the most favorable to the carrier, to be ascertained by competitive bidding under regulations of the Interstate Commerce Commission."

Under the regulations issued in 1919 by the Interstate Commerce Commission to render this law effective, any carrier subject to the Clayton Act, is required to prepare specifications and forms of proposals giving all the information essential to competitive bidding and to advertise in newspaper and at purchasing headquarters for two weeks prior to the opening of bids. Each bidder may be present when the bids are opened and examine each bid, which must state the name of the bidder and the officers, directors, general manager and purchasing agent of the bidder. Within ten days after opening bids, the carrier must accept the most favorable bid on the basis of the lowest price and reliability of the bidder to deliver, unless the right has previously

*C. C. C. & St. L. materials included 29 locomotives, 100-ft. deck turntables, steel tubes, safe ends, 400,000 tie dating nails, locomotive and car axles, 2,000 tons 90-lb. relayer rail, girder spans and other material.

* D. L. & W. materials included material for signal bridges, solid steel wheels, electrical equipment, car and locomotive axles, steel pipe and boiler tubes, requirements of dry steam, one turntable, steel for bridges, structural steel work and other material.

trusses, structural steelwork and guided materials.

2. N. Y. C. Lines: material used in locomotives with tenders, sheets, tubes, axles, wire nails and staples, steel bars, shapes, plates, billets, tenders, and signal pipe; incandescent lamps, steel wheels, two 300-kw. turbine cutters, wire fence and posts, grooves, switches, etc.; 800 gross tons of relay rails, 1960 tons S. & Y. rails, splice bars, track bolts and spikes, tie plates, locomotive tenders, metal parts for bridges, one 20,000-kw. turbine generator, one 2,500-kw. 666-v. converter and transformers, two 2,500-kw. converters, 2,760 k.v.a. transformers, one 2,000-kw. converter and equipment, asphaltum base fuel oil, switchboard equipment, 22 railway motors and 11 control equipments, and other material.

† N. & W. material included 828 cast steel truck bolster, 3,500 sheets jacket steel, brake shoes, tires, couplers and parts, cast steel truck side frames, 1,000 car axles, wrought steel pipe, 60,000 tons steel rails, riser plates, reinforcing bars, 100 body bolsters, 360 wrought steel wheels, 750 tie dating nails, 216,000 tons of coal, switch plates, electrical equipment.

fastenings, crossarms and steel for bridges; plates, bars, shapes, axles, crossings, gage roads, guard rail clamps, compromise joints, bridges, steel wheels and sheets, boiler tubes, pipe rails, piston beads, joint bars, switch points, paint, ballast, fence posts, rail bonds, terminals, drift pins, wire rope, wire, plate glass, mirrors, steel plates, bars and shapes; deck, wire and crystal steel glass; nails, fence and fencing; cinders and slag filling; wire and cable, coal, cement, track circuit connections, structural metal work for bridges, machinery for bridge, guy and messenger wire, gas coal, insulated wire.

↑↑↑ S. P. material included electric lamps, illuminating and lubricating oils, greases, etc., repair parts for industrial equipment, motors and controls, and coal.

been reserved publicly to reject all bids and advertise for new ones. Within 30 days after placing an order, each railway is required to file a report with the Inter-

Roads Reporting Ann Arbor.....	Number of Reports Filed				Materials Reported in 1927 Second-hand tie plates
	1924	1925	1926	1927	
B. & A.....	2	3	..	1	Coal unloading towers
B. & M.....	..	..	..	1	Bituminous coal
B. & S.....	1	1	1	1	Bituminous coal
B. R. & P.....	1	1	1	1	..
C. C. & O.....	1	..	..	..	..
C. C. & O.....	..	..	2	..	..
C. C. & O. N.....	..	..	..	..	..
C. C. & I. M.....	..	..	..	..	..
C. C. & N. W.....	12	8	7	5	Gasoline, kerosene, fortnite and mineral seal oil, and lubricants
C. B. & Q.....	1	..	..	..	25 freight and 10 passenger locomotives
C. R. I. & P.....	2	1	..	1	..
C. St. P. & O.....	1	1	..	..	..
C. N.....	..	..	3	..	Various items. See footnote*
C. C. C. & St. L.....	13	13	17	12	..
Cumberland & Pa.....	1	..	..	..	Anthracite coal
D. & H.....	2	2	1	1	Various items. See footnote**
D. L. & W.....	20	27	21	15	Locomotive fuel and six used locomotives
D. T. & I.....	..	..	2	2	..
E. P. & S. W.....	1	..	..	..	134,000 tons anthracite coal
Erie.....	3	3	2	2	..
G. H. & S. A.....	1	..	..	..	..
G. N.....	..	..	1	..	..
H. V.....	..	..	1	..	..
H. & T. C.....	..	..	1	..	..
I. H. B.....	..	1	1	1	Relayer rails
L. & N. E.....	1	1	1	2	Anthracite coal
Long Island.....	9	6	7	3	140,000 gal. furnace oil and 3,720,000 gal. fuel oil
L. P. & N*.....	4	5	2	..	..
L. R. & N.....	..	..	..	1	Cross and bridge ties, and bridge lumber
L. & N.....	..	..	1	..	..
M. & St. L.....	1	..	..	..	..
M. K. T.....	6	1	..	..	..
Montour.....	..	..	6	..	..
M. P.....	..	..	2	3	Jacket steel, tank plates, blue, black, galvanized and cop- per bearing sheets, and other items
N. Y. C. Lines.....	22	12	5	25	Various materials. See foot- note***
N. Y., N. H. & H.....	2	1	3	2	Bituminous coal
N. Y., S. & W.....	1	..	1	..	..
N. & W.....	36	45	49	47	Various materials. See foot- note†
N. S.....	..	..	1	..	..
N. E. O.....	..	..	..	..	..
N. P.....	3	1	..	..	..
N. W. P.....	..	..	..	..	..
O. S. L.....	..	..	..	..	..
O. T.....	1	..	..	..	..
Pac. N. Trac. Co.....	..	1	..	..	..
Penn.....	..	..	62	124	Various materials. See foot- note††
P. M.....	..	..	1	..	One car ferry
P. & E.....	..	..	..	2	One 120-ft. turntable and three locomotive tenders
P. & S.....	..	1	1	..	..
P. & W. Vo.....	1	1	1	..	..
P. S. & N.....	1	1	1	1	Bituminous coal
Reading.....	..	..	1	..	..
Rutland.....	..	2	..	1	Hardwood treated cross ties
St. L. S. W.....	1	..	..	..	..
S. V. & E.....	1	..	..	..	..
S. P.....	10	6	9	5	Various materials. See foot- note†††
S. P. in La. & Tex.....	1	1	..	1	Crude fuel oil
Sunset.....	..	..	..	1	Lumber, ties, rails and fas- tenings
U. P.....	1	1	1	1	Mazda lamps
Virginian.....	1	1	1	1	Coal

state Commerce Commission, containing a copy of the notice, the names of all bidders, officers, directors, purchasing agents, together with a copy of the contract.

263 Reports Filed

In pursuance of these regulations, 263 reports on the purchases of material and supplies were filed by a total of 28 railroads last year. This compared with 217 re-

ports filed by 34 roads in 1926, 147 reports from 29 roads in 1925, 166 reports from 35 roads in 1924, 214 reports from 27 roads in 1923, 181 reports from 27 roads, in 1922, and 262 reports from 22 roads in 1921, or a total of 1,450 reports since the law became effective seven years ago. The largest number of reports coming from any road in 1927 was 124 filed by the Pennsylvania.

The Norfolk & Western was the second with 47 reports, while the New York Central Lines filed 37

reports and the Delaware, Lackawanna & Western, the only other large contributor, filed 15 reports. The number of reports filed in 1927 was the largest since the practice was begun, the total number, however, being small when compared with the volume of purchases made by the roads annually.

The roads filing reports in the last six years, the number of reports filed each year and the materials covered by the reports filed in 1927 are given in the tabulation on the preceding page.

I. C. C. Rate Decisions Criticized by Senators

WASHINGTON, D. C.

THE Interstate Commerce Commission has been under a barrage of criticism on the part of a number of senators during the past week, both in Senate debate and at hearings before the committee on interstate commerce where Commissioner Esch has been questioned by senators from the southern coal states who are opposing confirmation of his reappointment to the commission because of his vote in the lake cargo coal rate case. The southern coal senators have gained some reinforcements by enlisting the services of others not particularly interested in that case by treating it as a manifestation of a general policy of the commission to use its rate regulation policy to "equalize prosperity" between sections. The controversy has been given some of the aspects of a partisan issue by charges that the commission's latest decision, in 1927, was influenced by political pressure exerted by the "old guard" of Pennsylvania, including Secretary Mellon, and that Commissioner Esch had changed his vote in order to keep from being dropped from the commission by the President, at the expiration of his term, as Commissioner Cox was not reappointed after he had voted against what the Pennsylvania interests wanted.

On February 18 and again on February 20 Commissioner Esch had passed a resolution proposed by Senator Robinson, of Arkansas, Democratic leader of the Senate, calling on the commission to report to Congress its authority for claiming the power to equalize prosperity between competing sections, Senator Reed, of Missouri, a candidate for the Democratic nomination for President, aligned himself with the critics of the commission's decision by reading in the Senate a carefully prepared speech reviewing the case from the viewpoint of the losers. The speech showed so much greater familiarity with the case, and particularly the partisan side of it, than Senator Reed usually displays in discussing freight rate questions, as to lead to some comment that he had "adopted" it. Referring to the order in which the commission suspended a reduction proposed by the southern roads to meet the cut it had ordered from the northern fields, pending an investigation which has just been concluded, Senator Reed said the result "is to place an artificial burden upon the people of a vast portion of the United States" and that its effect "is to produce the same result which might be brought about by an unlawful conspiracy between the railroads." He took the position that by ordering the railroads not to reduce rates which he said they had contended were "fully compensatory," the commission had ordered the carriers "to

do the very thing which the law was intended to prevent."

On February 17, also, Senator Sackett, of Kentucky, introduced in the Senate a resolution providing for an investigation of the commission's decisions in coal rate cases and of its alleged policies.

Commissioner Esch "On Trial"

On February 18 and again of February 20 Commissioner Esch was before the committee, for interrogation as to his reasons for his vote in the case, with persistent emphasis on the question whether the commission had not deliberately reduced the rates from Pennsylvania and Ohio to the lake ports, while expressing the opinion that a similar reduction should not be made in the southern rates, for the specific purpose of destroying the southern competition with the northern fields.

Mr. Esch insisted that the commission was merely trying to comply with its duty under the law to prescribe just and reasonable rates and that any advantage that accrued to any district was an incidental consequence of its conclusion as to the proper adjustment of rates for the distance involved and inevitably inherent in any exercise of its power. He said that the commission also had considered evidence showing that the southern coal fields had increased their percentage of the lake cargo coal business from 40 to 82 per cent while the proportion handled by the northern mines had been reduced, but he pointed out that the Hoch-Smith resolution had directed the commission to consider the conditions prevailing at a given time in any industry and said that while the coal industry of Pennsylvania and Ohio was reasonably prosperous at the time of the hearings which preceded the 1925 decision it was in a depressed condition at the time of the hearings which led to the reversal in 1927. He also insisted that the record of the second case contained a large amount of additional evidence bearing on the reasonableness of the northern lake cargo rates, including a showing that the rates from the northern district on lake coal had increased 112 to 117 per cent since 1912, whereas class rates in Central Freight Association territory had increased only 90 per cent, rates on 54 commodities in the same territory had increased only 80 per cent and lake coal rates from the southern districts had increased only 83 to 96 per cent.

Political Influence Denied

"It has been intimated," Mr. Esch said, "that I changed my decision because of political influence. I want to

say as emphatically as I can that I do not know of any political influence that affected my vote or that of any member of the commission." When Senator Neely asked if he believed he would have had "a single chance" of being reappointed if he had not changed his decision, Mr. Esch replied that he did not believe it would have affected his situation in the slightest; that neither the President nor any representative of the President had ever talked with him about it and that he had never been an applicant for the position.

When Mr. Esch referred to the Hoch-Smith resolution and the new evidence in the second case as having affected the commission's decision several senators asked if the commission took that seriously or as having the force of a statute. Senator Neely asked if it was not intended to apply specifically to agriculture and others took the position that it was a mere expression by Congress and did not have the binding effect of a statute. Mr. Esch observed that it declares the "true policy of rate-making", that it had been signed by the President, and that it directed the commission to take into consideration conditions it had not before.

"We have been wrestling with these rates since 1912," Mr. Esch said, referring to the lake cargo rates, "and even supermen could not harmonize these rate adjustments and satisfy all interests. A difficult economic situation is involved, due to the over development of the coal industry. We try to determine what are just and reasonable rates and their proper relations. If that results in advantage or disadvantage to any section it is inevitably involved in the power and duty of the commission to determine just and reasonable rates."

Most of the questions were asked by Senator Neely, of West Virginia, Senator Barkley, of Kentucky, and Senator Glass of Virginia, who are not members of the committee. A few members of the committee, particularly Senator Sackett, participated, and Senators Wheeler, of Montana, and Gooding, of Idaho, took advantage of the opportunity to engage in a debate on the application of the long-and-short haul clause to the trans-continental rates. Senator Fess, of Ohio, came to the aid of the commissioners on several occasions.

The southern senators during the debate and in their questions appeared to base their arguments on the theory that rates ought to be related to the cost of transportation but that distance is not the proper measure of cost in the lake cargo case because the southern coal-carrying roads can carry coal for less per mile than those serving the northern fields, and they appear especially bitter because the commission suspended the reduction proposed by the southern roads, which is now under consideration by the commission, treating it as if the commission had decided the case without a hearing. There were also interjected into the discussion several cases in which the commission has exercised its power to prescribe minimum rates to prevent a reduction offered by some railroad.

The Function of the I. C. C.

When Senator Neely asked if the commission considers it its function to build up business or stimulate prosperity in one section at the expense of another he replied that the commission has not sought to exercise that power; that it considers the reasonableness of rates, into which many factors enter, those most generally considered being distance and comparison with other rates, but that it is also directed by law to prevent undue discrimination or preference or prejudice as between shippers or communities. He said the commission has repeatedly stated that it has no authority to

equalize opportunities or fortunes or the cost of production, and he expressed the opinion that it ought not to be an "umpire between sections," but said the commission could not fix any rate without affecting someone advantageously or adversely.

Senator Sackett asked if the commission is not giving preference to one section by refusing to allow the southern carriers to reduce the rates and thus allowing them to earn more than a fair return. "My position is," he said, "that when you go beyond determining what is a reasonable rate you are exercising a dangerous power." On several occasions Mr. Esch declined to answer questions which he said were involved in the case now pending.

Mr. Esch pointed out that whereas the earlier lake cargo cases were based on the question of differentials, in the second case more emphasis was placed on the alleged unreasonableness of the northern rates. He was asked over and over again if it was not the purpose of the commission to try to help the northern fields to regain some of the tonnage they had lost to their competitors in the southern fields. He said it had merely tried to determine just and reasonable rates for the distance involved and that the result would probably be to the advantage of the northern mines but that experience would be required to demonstrate the effect and he said there was a question of fact as to the extent to which the southern mines would lose business because so many of the consumers demand the quality of coal they produce.

Senator Neely asked if the commissioner's statement that the shift in tonnage of the lake coal from one district to the other had been considered was not an admission that the commission was trying to equalize conditions. He also asked why the commission had inserted its expression of opinion that the southern roads should not meet the reduction. Mr. Esch said that if they should reduce their rates the old relation would be restored and that the commission was trying to establish a proper relation. While the cost studies before it in that case related mainly to the northern roads, the commission had before it the ton-mile earnings of the southern roads and extensive cost studies of the latter are before it in the pending case.

When the senator brought out that prior to 1912 the southern fields paid only 9 cents a ton more than the rate from the northern fields, and that the differential has been gradually increased to 45 cents, which he referred to as an increase of 400 per cent, "or 25 per cent a year for 16 years," Mr. Esch said there should also be considered the fact that the differential represents an additional haul from the southern fields ranging from 190 to nearly 300 miles. "Should we ignore the cost of haulage over that distance and just look at the percentage of increase in the differential?" he asked. He pointed out that the southern roads had originally established low rates on lake cargo coal as "missionary rates, without much consideration for distance or cost of transportation."

Senator Neely also brought up the recent decision in the Illinois-Indiana coal rate case, in which the commission increased the differential against Kentucky coal to 35 cents a ton. Commissioner Esch said that the complainants had asked for a differential of 50 cents but that the commission had decided that 35 cents was fair for a difference in distance of 88 miles. In reply to some questions by Senator Barkley he said the decision was not "based on" commercial conditions, and when the senator read some statements from the decision regarding the depressed condition in the Illinois

and Indiana mines and the relative cost of production he said it was impossible to say how much weight had been attached to that evidence by the individual commissioners.

Effect of Hoch-Smith Resolution

When he referred again to the effect of the Hoch-Smith resolution, Senator Glass, of Virginia, asked if the commission felt obligated to act on a joint resolution of Congress "obviously in conflict with an act of Congress." "That resolution didn't modify in the remotest way the law itself," Senator Glass said, "because it requires that anything done under it be done in accordance with the law. It was the merest expression on the part of Congress." Mr. Esch said that it required the commission in fixing reasonable rates to pay more attention than it had been doing to the conditions in an industry.

"What is a reasonable rate?" asked the senator.

"The commission has been trying to find that out for forty years," replied Mr. Esch.

"Well, I don't think you have succeeded," retorted Senator Glass. "The commission is considering things with which it has nothing to do, such as the operating costs of an industry. That was never contemplated by the statute and if the Hoch-Smith resolution requires it I shall move to have it repealed. But I don't think it does."

At one point Senator Gooding asked if the commission would not be changing rates pretty often if it were to consider the changing conditions in industry. Mr. Esch replied that that is one of the criticisms that has been made of the resolution as applied to agriculture. Senator Couzens, of Michigan, asked if the resolution was wise or if it ought to be repealed, but Commissioner Esch replied that that was a question of policy for Congress and declined to express an opinion.

The question as to the extent to which the Hoch-Smith resolution affected the commission's decision was made a prominent feature of the hearing on February 21, when Senator Hawes, of Missouri, asked that the committee call other members of the commission to testify, including the three who had voted against the decision, to see if they agreed with Mr. Esch that it changed the law to such an extent as to create a new condition.

"There has been almost the direct charge here," he said, "that this commissioner was influenced in his decision by his approaching reappointment and confirmation, but he has testified that the second decision was based on a new set of facts and also that the resolution had changed the law. It seems to me that to throw full light on this we should call the other members of the commission, to determine whether they felt that the resolution was binding on them and their interpretation of it, as to whether it modified the interstate commerce act. I can see why a change of mind without a change of facts or law might be a cause of suspicion but it is said there has also been a change in the law. Many members of Congress have thought the resolution applied only to agriculture. Congress would like to know the commission's interpretation of it." Senators Sackett and Neely objected that the hearing was called for the purpose of ascertaining the views of Commissioner Esch, but Senator Hawes insisted on his request that the commissioners be called and Chairman Watson suggested that the question should be considered in executive session. Senator Couzens said the hearing was developing into a rate hearing on a single issue and that he did not believe the Senate would be justified in confirming or refusing

to confirm a man because of his decision in a single case without ascertaining whether the other commissioners agreed with him.

Someone produced a copy of the Hoch-Smith resolution and passed it around and several of the senators indicated considerable interest in the language of the resolution they had passed so hastily three years ago.

Senator Glass asked Mr. Esch if the resolution, in directing the commission to consider conditions in the several industries "to the end that commodities may freely move," was meant to imply that a commodity "shall move freely in one section instead of in another." Mr. Esch said he did not think it meant that.

Senator Sackett took the witness through a series of questions regarding the factors to be considered in rate-making, asking if there had not been an increasing tendency on the part of the commission to prescribe mileage scales of rates and if he thought the mileage system should be more generally applied. Mr. Esch said that mileage scales had been very generally used for class rates and some commodity rates and seemed to cause less complaints when applied to some commodities on which there is keen competition from many sections to reach the markets, because each gets the advantage of its geographical location, but he said that he did not think they ought to be applied to commodities as a rule because they might restrict movement. He said the decision in the lake coal case, while recognizing distance, was far from prescribing mileage rates. The senator asked if the "real basis" is not the cost of transportation and the rest "largely camouflage." The commissioner said that the law had not prescribed standards and that it was necessary for the commission to exercise a "flexible judgment." He denied that the commission's expression of opinion that the southern roads should not reduce their rates represented "coercion." He said it was perhaps an "admonition" but that it was not a "prohibition." Senator Sackett read from Commissioner Hall's dissenting opinion that whether it was "minatory" or "monitory" it should not have been included.

Upon being excused from further questioning, Mr. Esch said, showing considerable feeling, that he had been in public life for thirty years but that never before had his character or integrity been questioned, and that "it has remained for this occasion to call in question my judicial integrity out of some ten thousand cases passed upon by the commission since my membership on it. No political influence affected my judgment. If it did I am not worthy to sit on the commission." Senator Neely said that he "took no pleasure in making a fight against a man like Mr. Esch" and that there is no personality in it but that he was fighting "a decision that has crucified the coal industry of the state I represent."

A. M. Belcher, of Charleston, W. Va., saying he represented the coal producers and civic organizations of the four southern coal states, appeared with a printed statement of 44 pages as to why Mr. Esch should not be confirmed, but as only two members of the committee were present by this time, Chairman Watson suggested that he file it. He did so, but stated an outline of the reasons, among them being that Mr. Esch "stands too strongly for the mileage scale system of rate-making" and that he "ignores the whole trend of modern transportation which has been to bring the whole world into touch with the markets."

Edgar E. Clark, for fifteen years a member of the commission, asked the committee not to "crucify a man whose term of office happened to expire just after he

had decided a case in which one side was not satisfied with the decision." He said he had no interest in the lake cargo case but that he was interested in the commission as an institution and that no new departure was represented by the decision but the commission must always deal with controversies as to which no one could satisfy both sides. "It is entitled to the confidence of the country so long as it conducts its business as it has," he said, "and it is not fair to the commission to create a situation that would make it necessary for them in deciding a case first to decide which side will make the densest fog." Mr. Clark said "the entire commission seems to be under attempted indictment here," and that he had not heard any question as to the ability or integrity of the nominee.

Hoch-Smith Resolution Not a Mandate

When asked his opinion as to the effect of the Hoch-Smith resolution he said he did not agree that it constitutes a mandate to the commission and that he thought that a careful analysis will show that it does not provide any power the commission did not have before.

The only new things found in it, he said, are the declaration of policy as to rate-making and the direction to make an investigation of the rate structure. "It was a mistake to enact it and it has done a world of mischief and I don't know that it has done any good. In an effort to accomplish something toward relief for agriculture, the resolution as passed reached out and took in all the rates on everything. The commission has divided its investigation of the rate structure into branches and 35,000 pages of record have been taken as to grain rates alone and they haven't finished yet. Commercial rivalries in this country are so interwoven that it is almost a superhuman task to undertake to revise the rate structure of the country in one proceeding."

Investigation of Coal Rate Decisions Proposed

The resolution introduced by Senator Sackett, S. Res. 150, begins with a paragraph which had been rejected by the Senate the day before when offered by Senator Reed, of Pennsylvania, as an amendment to the resolution providing for an investigation of conditions in the bituminous coal mines, with particular reference to labor conditions. It would direct the committee on interstate commerce, or a subcommittee, to make an investigation and report to the Senate

"Of the existing rate structures of freight rates on bituminous coal moving in interstate commerce to determine whether there exist injustices and unfairness therein and whether any mining districts are being unfairly or abnormally stimulated and overdeveloped or are being depressed thereby.

"Also, to investigate and ascertain the power, authority, and practices of the Interstate Commerce Commission under existing law to control the minimum freight rates to be charged by railroads for the purpose or with the effect of increasing or preventing competition between mining districts located in different States by equalizing the costs of production and distribution in industry through requirement of transportation charges upon bituminous coal are more than compensatory to the carriers performing the services of distribution.

"And particularly to investigate and ascertain the effect on the bituminous-coal industry and coal-mining districts of the States of Pennsylvania, Ohio, West Virginia, Virginia, Kentucky, and Tennessee of the orders of the Interstate Commerce Commission for the reduc-

tion of and/or the refusal to permit the reduction of freight rates on bituminous coal by the carriers serving said States."

The resolution was referred to the committee on interstate commerce.

Senator Reed's Statement

Senator Reed, of Missouri, in his speech, said that the commission "is assuming the right to fix railroad rates, not upon the basis of the cost of transportation, but it proposes to lower or raise rates for the benefit of a particular locality to the detriment of an established business and the rights of another locality." "The power now usurped by the Interstate Commerce Commission is a greater and more destructive power than has ever been undertaken under any constitutional government to my knowledge," he said. "Men like Esch who hold that doctrine, are usurpers of power and an usurper of power is not fit to hold any office within the gift of a free people."

He said that the latest decision in the lake cargo case was the result of political pressure brought to bear by Senator Reed, of Pennsylvania; that the removal of Commissioner Cox "had removed one of the obstacles to the reversal of the case"; that the term of Commissioner Esch was about to expire, and that he "naturally desired to avoid a similar fate," and that upon rehearing, "although there had been no change in the conditions, Esch and Aitchison changed their votes and rendered a decision fixing the differential at the point demanded by the Pennsylvania interests."

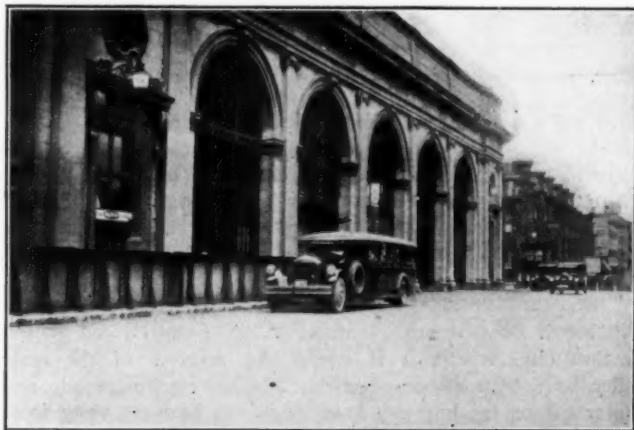
General Debate

The speech was followed by a general debate and Senator Reed of Pennsylvania answered it briefly, saying that the reduction allowed was less than half of that asked.

He quoted rates tending to show that in proportion to distance the southern mines have been getting their coal hauled both to the lakes and to tidewater at much lower rates than those from Pennsylvania.

For example, he said that before the decision the rate from Pittsburgh to the nearest lake port was \$1.66 for 163 miles, while from Harlan, Ky., the rate was \$1.91 for 463 miles, and that from Pittsburgh to Philadelphia the rate on coal is \$2.72, the same as that from Kentucky to Hampton Roads, 612 miles. He said the commission has undertaken to revise the geography of the country so as to equalize advantages that ought to belong to the nearest point.

* * *



N. E. T. Boston-Providence Coach at Back Bay Station, Boston

Rock Island Adopts Uniform Highway Accident Report Card

THE Chicago, Rock Island & Pacific has adopted a standard card and form for use in reporting accidents at highway grade crossings in the belief that it will be valuable in the collection of statistics, with a view to the reduction of that type of accidents. This card, which must be mailed to the superintendent of safety at Chicago after the occurrence of each highway grade crossing accident, was prepared jointly by the claim, safety, law, engineering and operating departments. It provides space for the notation of all essential information concerning the accident and the condi-

ROCK ISLAND LINES
REPORT OF ACCIDENT AT HIGHWAY GRADE CROSSING

File C. I. 1. U. 200

PROTECTION				CAUSE				DIVISION			
Signal	Gate	Other	None	Signal	Gate	Other	None	Signal	Gate	Other	None

PLACE - Mile Post or Near City or Town State 19

Name of Crossing Time of Accident A. M. P. M.

1. Protection ☐ Fully Protected ☐ Partially Protected ☐ Unprotected ☐ Obstruction Crossing - Road ☐ Fair ☐ Poor ☐

2. VIEW - Unobstructed ☐ Fully Obstructed ☐ Obstructed ☐ Obstruction on ☐ or ☐ Right of Way

3. (a) DESCRIPTION OF HIGHEST IMPROVED ☐ Unimproved ☐ OBSTRUCTION CROSSING - Road ☐ Fair ☐ Poor ☐

(b) HIGHWAY TRAFFIC

24 Hour Period

Through Traffic ☐ 1 to 10 ☐ 11 to 20 ☐ 21 to 30 ☐ 31 to 40 ☐ 41 to 50 ☐ Over 50 ☐

24 Hour Period

Through Traffic ☐ 1 to 10 ☐ 11 to 20 ☐ 21 to 30 ☐ 31 to 40 ☐ 41 to 50 ☐ Over 50 ☐

(c) RAILROAD TRAFFIC

24 Hour Period

Through Traffic ☐ 1 to 10 ☐ 11 to 20 ☐ 21 to 30 ☐ 31 to 40 ☐ 41 to 50 ☐ Over 50 ☐

(d) OBSTRUCTION - City Street ☐ County Road ☐ Township Road ☐ State Highway ☐ Private Road ☐

(e) Appointed from Engineer's File ☐ Premier's File ☐

(f) Passenger Train No. Freight Train No. Engine No. Other

(g) Was Whistle and Bell sounded in accordance with rules and instructions ☐ If dark, was headlight burning ☐

(h) Day light ☐ Dark ☐ Weather Conditions

(i) PROTECTION DEVICE - Working ☐ Not Working ☐ Flagman on Duty ☐ Off Duty ☐

NOTE: In all cases of Accident at Highway Grade Crossings this card must be mailed to SUPERINTENDENT SAFETY, CHICAGO, ILLINOIS.

Rock Island Card for Reporting Highway Accidents

tions at the particular grade crossing involved. Included on the card filled out after an accident are notations on the protection at the crossing, the cause, the casualties, the damage, the view, a description of the highway

4. Cause of Accident

5. Number of Persons in Automobile 6. Driver Age Years. Experience Years.

7. Type of Car 8. State License No.

9. Number of persons in Vehicle other than Automobile 10. Type of Vehicle 11. Pedestrians

12. Number Persons Killed 13. Number Persons Injured - Seriously Slightly

14. Damage to Railroad Property. (Describe)

(a) Other than Crossing Gates Estimated Amount \$

(b) Crossing Gates Estimated Amount \$

15. Damage to Other than Railroad Property Estimated Amount \$

Date 19 Superintendent

Reverse Side of Accident Card

and its traffic, a summary of the railroad traffic, the train number, weather conditions, the age and driving experience of the driver, the type of automobile and the number of persons involved in the accident.

THE USEFULNESS OF THE TRAIN CALLER is past; so says the Pittsburgh Post-Gazette referring to the Pennsylvania station in that city, where, it is stated, the services of the train caller have been dispensed with. The private automobile and motor car on the highway have taken the business away from the railroad. The passenger train traffic is cut down and the same treatment must be applied to the payroll. Moreover, says the reporter, a caller is no longer a necessity.

Looking Backward

Fifty Years Ago

The new line of the Pittsburgh, Cincinnati & St. Louis (now part of the Pennsylvania) between Pittsburgh, Pa., and Wheeling, W. Va., via Steubenville, Ohio, was placed in operation on February 25.—*Railway Age*, February 28, 1878.

The New Jersey legislature has passed an amendment to the general railroad law, which is intended to prevent the formation of "wild-cat" companies, which do not really intend to build their projected lines. It requires every new company to deposit with the secretary of state the sum of \$2,000 per mile of road, which is to be returned as each mile of road is completed.—*Railroad Gazette*, February 22, 1878.

On February 20 the House Committee on Public Lands agreed to report a bill forfeiting all land grants to 21 railroads in the West. The reason given for such pre-emptory action is that it would restore about 100,000,000 acres of land to the public domain. This bill intends not merely that no more lands shall be granted, but that a portion of those which were long ago given and upon the strength of which great railway enterprises were undertaken, shall be recalled. Among the grants affected are those of the Northern Pacific, the Texas Pacific, the Atlantic Pacific (now parts of the St. Louis-San Francisco and Atchison, Topeka & Santa Fe) and the Oregon Central (now part of the Southern Pacific).—*Railway Age*, February 28, 1878.

Twenty-Five Years Ago

A partial table of figures of railway operations for 1902 shows that gross earnings on railroads in all parts of the United States increased over the previous year by about 12 per cent. This is regarded as highly significant in that the year 1901 was itself remarkable for an unprecedented increase over 1900.—*Railway Age*, February 27, 1903.

The length of railroad in the United States which is worked by the block system is now nearly 30,000 miles, or roughly 4,000 miles more than it was two years ago. The total length of road worked by automatic signals is 3,877 miles, the remainder of the total being operated by manual signaling.—*Railroad Gazette*, February 27, 1903.

A. H. Rudd, for the last four years, signal engineer of the Delaware, Lackawana & Western, has been appointed assistant signal engineer of the Pennsylvania.—*Railroad Gazette*, February 27, 1903.

Ten Years Ago

After working for more than three years on a standard box car the designs of the American Railway Association have been adopted by the director-general of railroads, who has appointed a committee of car builders with S. M. Vauclain, vice-president of the Baldwin Locomotive Works as chairman, to produce the car.—*Railway Age*, February 22, 1918.

The Postmaster General proposes to establish aerial transportation for letters on one route, as soon as practicable, and has asked for bids for the construction of five airplanes for an aerial route for first class mail between Washington, Philadelphia and New York, making one round trip per day. It is thought that the postage rate will not exceed 25 cents per ounce.—*Railway Age*, February 22, 1918.

The Pacific Great Eastern has been taken over by the British Columbia government following the settlement of suits brought against the contractor, who has portions of the railroad under construction, and the owners of the company.—*Railway Age*, February 22, 1918.

Communications and Books

Continuous Operation of Yard Locomotives

DENISON, TEX.

TO THE EDITOR:

I read with great interest your article on yard power utilization in the November 12 issue, page 917. Inasmuch as our line started a similar campaign two or three years ago, it prompted me to check our performance and, in doing so, I find we have been able to make a considerably better record.

Engine 110, at Denison-Ray terminal, worked continuously for 744 hrs., or a total of 4,464 engine miles, figured at six miles per engine hour, without being relieved one minute, supplies being placed on the engine by hostlers during the yardmen's meal period. This engine consumed 36,510 gals. of fuel oil, of 8.17 gals. per engine mile during 31 days continuous service. In terms of coal, this would be 102 1-8 lbs. per engine hour. This engine was in hump service during the entire time, performing heavy switching, having humped approximately 31,000 cars, or about 1,000,000 tons.

At present we are working nine shifts at this terminal with three 60 per cent switch engines, one crew relieving the other and the engine working continuously. It is not uncommon for an engine to work 15 to 20 days continuously and I believe conditions at our terminal are comparable with those at other large terminals throughout the country, where the practice of working engines continuously would be as feasible as it is here.

There is no doubt that a great deal can be saved in engine-house expense, as well as in fuel, if more attention is given to yard power utilization.

E. E. HANNA,

Superintendent, Missouri-Kansas-Texas.

The Yardmaster's Problems

WATERTOWN, N. Y.

TO THE EDITOR:

As a general yardmaster, I am naturally interested in yard operation and several articles on this subject published recently in the *Railway Age* have developed food for thought among all those who are connected with terminal operation. They have touched on a number of features of yard operation to which I desire to call attention further.

The general yardmaster, and, through him, his subordinates, should be supplied with advance reports of traffic movements, based upon personal touch, if possible, between the yards exchanging traffic. He is then in position to anticipate his requirements, enabling him to take off or put on such switching power as may be required to handle the traffic in sight speedily and, above all, economically.

As a chronicle of expense, detailed reports should be prepared by each yard, indicating the wages paid to engine crews, ground crews, switchtenders, clerical and supervisory forces. Such wages should be carried as straight time, separated of course as outlined and the overtime should be carried as another item, to be added to the straight time to give the gross payroll. Any allowable deductions, such as passenger train shifting, work trains, etc., should then be deducted, leaving a net yard payroll which is truly indicative of the actual functioning expense and clearly points out where the burden lies or where increases are occurring. The net payroll should be divided by the cars handled or forwarded, to arrive at the cost per car. Yard engine coal consumed must be carried as an item on any comprehensive yard report, separated as between freight and passenger shifting. These figures should then be expressed in terms of coal consumed per yard engine hour and pounds of coal per car handled. Such figures show the yardmaster definitely and precisely what is going on and give the superintendent the information first hand.

All overtime should be tabulated and given to each yardmaster in the terminal daily, with a request for detailed information as to its necessity. Often such investigations develop that some unnecessary burden exists which a trifling rearrangement of power will overcome.

Continuous operation of switching power is vital to any good operation. This subject is purely one of co-operation between the management and the employees. If a passenger engine can be operated over two or more divisions, why cannot a yard engine be operated over a period of days, or even weeks? Engine crews, after they become educated and understand the benefits, are glad to co-operate and eager to keep the same engine day after day. Yardmasters, knowing that crews will change tricks on the lead, are relieved of the worry of figuring out the probability of an engine being late from the house.

I firmly believe that there never was a greater opportunity for increased efficiency in yard operation than that which now exists. I feel that instead of investing large sums in new yards, the present lay-outs may be systematized so that the facilities of the terminal can be increased to take care of the added burden brought about by changed traffic conditions.

F. H. PEIFFER,

General Yardmaster, New York Central.

Books and Articles of Special Interest to Railroaders

Books and Pamphlets

(Compiled by Elizabeth Cullen, Reference Librarian,
Bureau of Railway Economics, Washington, D. C.)

The Effect of Climatic Changes Upon A Multiple-Span Reinforced Concrete Arch Bridge, by Wilbur M. Wilson. "The bridge on which the observations were made is a six-span, two-rib highway bridge over the Vermilion River at Gilbert Street, Danville, Illinois. It was completed in 1922." p. 7-8. Engineering Experiment Station Bulletin No. 174. 68 p. Pub. by University of Illinois, Urbana, Ill. 40 cents.

Industrial and Railway Amalgamations, by Sir Josiah Stamp. The trend of modern thought regarding what is called in American "consolidations," the economic aspects of consolidation and contrasts between railway and other consolidations were discussed by the Chairman and President of the Executive of the London, Midland & Scottish in this address to the Railway Students' Association of the London School of Economics. 31 p. Pub. by London General Press, London, Eng. 2 shillings.

Periodical Articles

Activities of the Railway Employees Department, by J. M. Burns. Reviews results of the year 1927. American Federationist, February 28, 1928, p. 157-160.

Automotive Equipment and Development, by Major Levin H. Campbell. Cross-country cars, tractors of all sorts, trucks, tanks and other automotive equipment developed for the U. S. Army. Illustrated. Military Engineer, Jan.-Feb., 1928, p. 6-12.

Europe-Asia Railway Conference, by McConney Werlich. "It is anticipated that some type of through Europe-Asia railway tickets will be available on May 15, 1928..." Commerce Reports, February 20, 1928, p. 483.

The Railroads—The Fortunes of Every Man Are Involved in Their Problems, by Frederick Strauss. A thoughtful article, forcefully presenting some important phases of the current "railroad problem." Century Magazine, March, 1928, p. 545-550.

Sharp Increase Shown By Index of Business Activity. "All classes of freight, except coal, showed a more than seasonal increase...." p. 323, Annalist, February 17, 1928, p. 323-324.

Odds and Ends of Railroading

The consarned fool who rocked the boat,
No more his craft is tossing,
But we still have the half-wit goat
Who races a train to the crossing.

The Jackson Day run is the great athletic event in the city of New Orleans. It is held on January 8 to commemorate the Battle of New Orleans. J. L. Boone, a Southern Pacific employee, won it this year, thus making the third successive year of Southern Pacific victories, Gilbert Wade of that company having won it in 1925 and 1926.

Maybe the Rest of the Foursome Will Prefer to Read Hereafter

How a quiet game of bridge threw the club car of the Red Arrow bound from Detroit to Washington into a turmoil and started a heated discussion among 20 passengers was explained by A. J. Moran, auditor of freight accounts of the Erie Railroad, who held 13 spades and didn't know what to do, says the Washington Star.

But Mr. Moran's luck did not stop with his cards. When finally he bid 4 spades no one raised him and he cleaned the boards. Other games in the car had been disrupted and 20 passengers joined the group which milled around the table to see the perfect bridge hand, every one arguing how they would have played it.

Those who played with him, it is reported, were E. R. Woodson, secretary of the Railway Accounting Officers' Association, who opened the bid with 1 heart; A. T. Martin, a freight traffic officer of the Southern Railway, who bid 2 diamonds, and T. H. Maxwell of Baltimore, who called 2 hearts. Moran had the fourth bid and all the spades in the deck.

The Good Old Days

Professor William J. Cunningham of the Harvard Business School in running over some old papers recently came across a copy of an appeal issued by G. Twichell, superintendent of the Boston & Worcester, in 1857 calling on employees to accept a 10 per cent decrease in wages. Professor Cunningham has sent us a copy of this document which reads as follows:

NOTICE ISSUED BY G. TWICHELL, SUPERINTENDENT BOSTON AND WORCESTER RAILROAD

Boston, Oct. 30, 1857

"TO THE EMPLOYEES:

"GENTLEMEN:—The receipts from Passenger and Freight have fallen off, during the last month (as compared with the corresponding month of last year), over TWENTY THOUSAND DOLLARS, with very little prospect of any improvement during the coming winter; thus making a reduction in expenses absolutely necessary. Let us fully realize this fact, and imagine ourselves in this noble ship, with a valuable cargo, from which its owners expect and are entitled to a return for their investment, and that they are dependent as much upon this return, for the support of their families, as we are upon our wages for the support of ours. Let us also consider that a sudden and unexpected financial storm has come upon us, with ships, large and small, foundering all around us, with passengers and crew clinging to the wrecks and struggling for life; let us ask ourselves what, under these circumstances, shall we do? Shall we abandon the best interests of the ship, and throw overboard her crew, who have cheerfully contended with the elements to keep her in order, and her way clear, for so many years? Or shall we put ourselves upon diminished allowance during the storm, and labor, with fidelity and economy, to keep her in trim, stop all leaks, and bring her home uninjured?

"It is a sad fact that the prospect of a hard winter is before us, with the wheels of business clogged, with the capitalist crippled, and with honest labor seeking employment. Therefore, let us, each and all of us, be content with a reduction in our pay

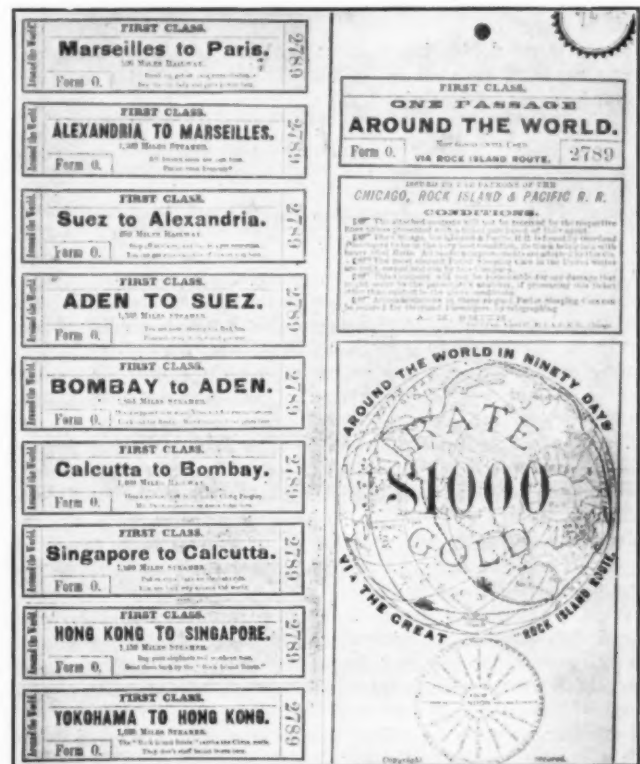
of TEN PER CENT, until such time as the business of the road will warrant an advance; and let us resolve anew to be faithful and economical to the extent of our individual capacity—believing, as we must, that NINE dollars is worth more to each and all of us now, than TEN was before this depression in business commenced."

G. TWICHELL

Appended to this appeal was a copy of the road's payroll, showing a range in salaries from \$1 a day for a laborer to \$3000 per annum for the president. Professor Cunningham draws attention to the nautical turn of Mr. Twichell's rhetoric. He does not tell us, however, whether or not the record discloses an enthusiastic reception for the plea.

A Round-the-World Ticket

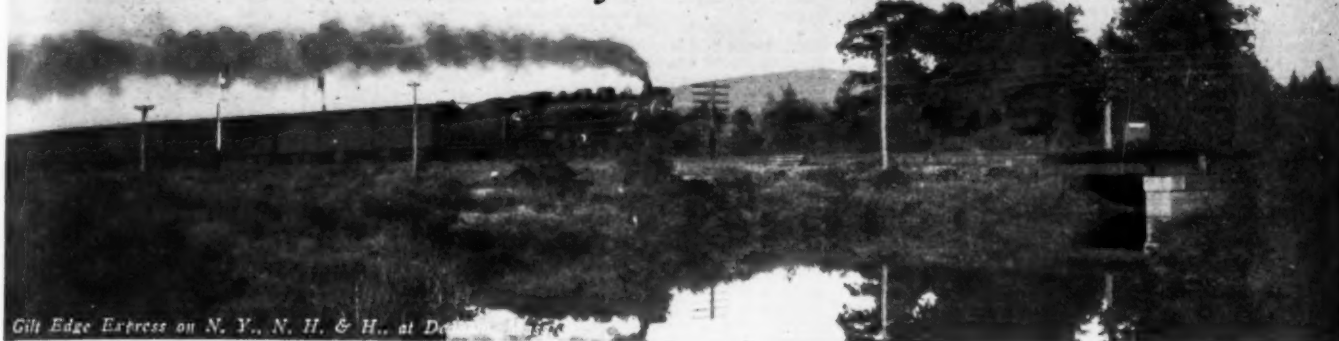
A part of a round-the-world ticket issued in 1872 by the Chicago, Rock Island & Pacific is shown in the illustration. The fare was then \$1,000 per person. The ticket consisted of a number of coupons, each good between two of the cities visited by the tour. One unusual feature was the timely comment printed on each coupon. The Marseilles-Paris coupon said: "Buck up, get on your store clothes. Buy the old lady and girls gowns here." The Suez-Alexandria coupon carried this surprising announcement: "Stop off at Cairo and lay in your mummies. You can get nine varieties of lice on you



Underwood & Underwood

here." Biblical references were not omitted. The Aden-Suez coupon read: "You are now crossing the Red Sea. Pharaoh tried it once and got wet," while the Bombay-Aden coupon said: "This is where Adam and Eve started business." The well-known roughness of the English Channel is indicated by the following on the Calais-Dover coupon: "Hire servant to hold bucket for you. Pull down your vest and wipe chin before landing." The Liverpool-New York coupon carried this parting injunction: "You're 'round the world now. Next time bring your own wife."

NEWS of the WEEK



THE SAFETY SECTION of the American Railway Association will hold its annual meeting at Hotel Statler, Buffalo, N. Y., on May 15, 16 and 17.

COLONEL WILLIAM B. GREELEY, chief of the Forest Service of the Department of Agriculture, has resigned to accept a position with the West Coast Lumber Manufacturers' Association. He will be succeeded by Major R. Y. Stuart.

A VOTE among the railroads of the United States that are parties to the agreement with the American Railway Express Company indicates a desire to exercise the option which provides for the purchase of the American Railway Express Company in March, 1929. Further action depends upon a future meeting of the company contract committee of the Association of Railway Executives.

THE PACIFIC RAILWAY CLUB will hold its eleventh annual meeting and banquet at the Fairmount Hotel, San Francisco, on March 8. The principal speaker will be R. E. M. Cowie, president of the American Railway Express Company. The election of officers for the ensuing year will take place at the same time. The nominee for president is Thomas Ahern, assistant general manager of the northern district of the South Pacific.

A SPEED OF 207 MILES AN HOUR is the record made by Captain Malcolm Campbell, an Englishman, in an automobile on the beach at Daytona Beach, Fla., on February 19. Taking a four-mile rolling start, Captain Campbell traversed a mile with the wind at 214.797 miles an hour; and on the return the run was made at 199.667 miles an hour. The average above noted (207) was made up from two records, one with and one against the wind. The best time with the wind for one mile was 16.76 seconds.

First Train Through the Moffat Tunnel

The first train will be run through the Moffat tunnel on February 26, for which a rate of \$3.00 for the round trip from Denver has been established. Arrangements to commemorate the event include special tickets which each holder will sign and which, along with news-

paper accounts of the trip, will be placed in an iron box in the tunnel, which is scheduled to be opened fifty years hence. The Denver newspapers have presented the officers with gold spikes and these are to be driven by Governor Adams of Colorado and Governor Dern of Utah. George H. Barnes, who was the conductor on the first train that operated over the Moffat road on July 7, 1903, is still with the line and will be the conductor on the first train through the tunnel.

B. & M. Enginemen Advanced 7½ Per Cent

The Boston & Maine has increased the pay of locomotive engineers 7½ per cent. As a result of arbitration awards and otherwise the Boston & Maine, within the last year, for the benefit of about 16,000 employees, has added \$2,124,330 to its payrolls, these wage increases averaging 5.33 per cent. The enginemen's increase affects more than 900 men and adds \$160,000 to the roll. The previous increases have been made for conductors, trainmen, signalmen, mechanics and helpers, stationary engineers and firemen, bridge and building workers, locomotive firemen and hostlers, clerks and station service employees, telegraphers, crossing tenders, supervisors, dining car stewards and track foremen and assistants.

The Responsibilities of an Express Messenger

For an express messenger to be absent from his car for ten minutes is not necessarily a neglect of duty. This is the salient point in a decision which has been handed down by the Supreme Court of Maine (139 Atl. 784) in a suit against the American Railway Express Company. A dog, described as a quiet dog, was in a crate, double-lathed, making a journey by express; and when messenger was absent, the dog, "acting on the impulse of its inherent nature and its irresponsible instinct to escape from bondage", gnawed its way out of the crate and jumped out of the door to the ground. Subsequently, the animal fell a victim to an automobile, though the expressman had chased him on foot

and by automobile from noon until the darkness of night stopped the chase. These being the circumstances, the court held that no negligence of the carrier contributed to the loss of the dog.

Russian Engineers Study American Methods

A. A. Lazarevsky, chief engineer of the Russian state railroads, and three of his engineers, on February 17 completed a 10-day observation and inspection tour over the lines of the Northern Pacific as guests of Col. B. O. Johnson, assistant to the president. Mr. Lazarevsky is about to begin the construction of 1,000 miles of new line, to be known as the Turkestan-Siberian Railway, and came to America to study equipment and the methods of construction employed here. Colonel Johnson spent five years in Russia as vice-chairman of the Inter-Allied Technical Board, engaged in maintaining the operation of the Trans-Siberian Railway and while there he became a personal friend of Mr. Lazarevsky. The visitors were shown the construction work on the new 62-mile Redwater branch which is being built from a point near Glendive, Mont., to Brockway via Circle, and also were escorted to the electrically operated coal mines of the Northern Pacific at Colstrip, Mont., where an electric shovel excavates and loads 7 tons of coal on a car at each operation.

Senate Committee to Investigate Coal Strike Conditions

The Senate on February 16 adopted the resolution proposed by Senator Johnson, of California, providing for an investigation by the Senate committee on interstate commerce, or a sub-committee, of conditions in the bituminous coal fields "and the reasons for conditions and happenings therein." By a vote of 60 to 15 it rejected an amendment offered by Senator Reed, of Pennsylvania, which would have directed the committee to "investigate the existing rate structure of freight rates on bituminous coal to determine whether there exists injustices and unfairness therein, and whether any mining districts are being unfairly and abnormally stimulated and

(Continued on page 472)

Operating Statistics of Large Steam Railways—Selected Items for December, 1927, Com-

Region, road and year		Average miles of road operated	Train-miles	Locomotive-miles		Car-miles		Ton-miles (thousands)		Average number of locomotives on line					
				Principal and helper	Light	Loaded (thousands)	Per cent loaded	Gross. Excluding locomotive and tender	Net. Revenue and non-revenue	Service-able	Un-service-able	Per cent un-service-able	Stored		
New England Region:															
Boston & Albany.....		1927	407	204,629	219,147	24,106	4,695	63.9	251,230	91,449	105	16	12.9	6	
		1926	407	260,456	282,633	31,436	5,001	64.3	275,800	108,252	105	14	11.6	3	
Boston & Maine.....		1927	2,074	484,786	570,126	52,589	11,773	64.6	635,137	236,841	263	62	19.1	4	
		1926	2,135	488,345	565,432	50,561	12,071	68.5	627,708	251,453	292	68	18.8	21	
N. Y., New H. & Hart.....		1927	2,140	572,308	618,532	38,392	14,646	64.6	785,275	303,223	322	53	14.0	44	
		1926	2,146	605,710	638,158	49,522	15,433	65.9	844,116	351,340	305	75	19.7	9	
Great Lakes Region:															
Delaware & Hudson.....		1927	875	336,031	448,790	53,614	9,011	60.0	575,225	263,873	248	25	9.2	79	
		1926	875	380,640	521,755	56,940	10,013	60.0	666,928	321,299	242	36	13.0	59	
Del., Lack. & Western....		1927	998	510,731	577,240	63,969	15,685	66.4	892,606	373,249	246	53	17.8	11	
		1926	999	590,753	688,288	79,861	17,459	67.0	1,004,439	434,724	271	49	15.3	8	
Erie (inc. Chi. & Erie)....		1927	2,317	938,932	1,015,271	78,174	34,006	62.8	2,059,285	853,538	417	127	23.3	34	
		1926	2,317	1,053,557	1,167,928	128,571	35,198	63.1	2,215,675	987,937	552	110	16.6	61	
Lehigh Valley		1927	1,345	546,676	596,409	67,443	15,175	61.3	948,617	391,799	361	72	16.7	63	
		1926	1,345	650,242	717,316	83,517	18,115	61.8	1,122,818	498,461	387	76	16.3	52	
Michigan Central		1927	1,822	517,936	545,003	21,019	15,803	59.9	897,176	310,433	218	70	24.1	64	
		1926	1,820	539,493	557,392	17,664	16,276	60.4	928,950	339,266	238	64	21.2	66	
New York Central.....		1927	6,478	1,936,310	2,162,888	160,234	68,433	59.9	4,215,493	1,742,509	1,092	313	22.3	316	
		1926	6,482	2,326,636	2,682,602	199,473	77,806	59.1	5,081,533	2,238,655	1,120	294	20.8	178	
New York, Chi. & St. L.....		1927	1,665	618,270	625,654	7,772	18,883	61.7	1,069,820	392,004	231	50	17.8	69	
		1926	1,665	698,243	703,988	8,426	20,160	63.1	1,149,203	448,936	241	60	19.8	46	
Pere Marquette		1927	2,181	386,253	388,636	4,514	9,204	59.6	565,790	235,222	185	36	16.4	23	
		1926	2,180	423,978	429,171	5,076	9,371	60.8	568,991	238,803	186	35	15.7	20	
Pitts. & Lake Erie.....		1927	231	110,920	111,629	2,046	3,412	58.2	284,300	156,754	57	15	20.7	17	
		1926	231	157,431	160,009	2,424	4,930	58.0	395,651	221,949	60	12	16.6	9	
Wabash		1927	2,497	705,487	737,698	10,796	19,956	63.4	1,139,024	426,778	315	56	15.1	75	
		1926	2,497	772,975	805,116	12,319	21,020	62.4	1,238,673	482,592	329	56	14.5	41	
Central Eastern Region:															
Baltimore & Ohio.....		1927	5,534	1,848,333	2,158,856	168,860	49,195	59.9	3,328,115	1,543,131	1,036	240	18.8	197	
		1926	5,507	2,196,424	2,586,212	210,647	57,645	58.3	4,048,409	1,941,374	1,091	176	13.9	66	
Central of New Jersey....		1927	691	254,846	275,932	47,491	6,773	57.1	458,419	215,583	186	30	13.8	31	
		1926	691	294,236	318,314	33,688	7,446	57.8	517,057	250,526	214	33	13.2	15	
Chicago & Eastern Ill.....		1927	945	280,090	281,825	3,885	6,472	59.1	431,174	198,233	108	43	28.4	23	
		1926	945	319,160	322,645	5,519	7,674	59.7	511,192	243,299	110	46	29.6	16	
Clev., Cin., Chi. & St. L.....		1927	2,373	715,890	746,530	18,140	20,365	60.4	1,359,662	634,173	346	79	18.6	47	
		1926	2,374	807,419	839,776	22,456	22,366	56.5	1,572,486	727,688	348	74	17.6	17	
Elgin, Joliet & Eastern....		1927	461	130,753	138,987	6,307	3,400	61.9	264,079	135,156	81	11	11.8	...	
		1926	461	139,927	148,383	6,246	3,549	58.1	289,972	149,123	78	14	15.0	1	
Long Island		1927	396	44,452	47,187	13,207	522	55.6	34,637	13,183	47	13	21.6	...	
		1926	393	45,048	46,536	12,730	515	54.6	34,618	13,232	45	11	19.9	...	
Pennsylvania System		1927	10,852	3,857,061	4,323,490	371,540	115,368	61.8	7,673,322	3,482,913	2,865	377	11.6	849	
		1926	10,892	5,244,943	5,755,415	470,568	136,286	60.8	9,465,784	4,492,193	2,859	452	13.6	239	
Reading		1927	1,131	588,812	637,212	60,591	14,894	57.1	1,087,696	535,620	322	79	19.8	45	
		1926	1,129	747,816	822,040	80,417	18,490	58.5	1,370,679	715,639	320	68	17.5	5	
Pocahontas Region:															
Chesapeake & Ohio.....		1927	2,706	1,085,280	1,176,154	47,281	32,634	55.1	2,653,715	1,409,363	548	99	15.3	100	
		1926	2,651	1,314,903	1,424,396	61,754	40,384	54.1	3,375,453	1,824,479	555	88	13.7	12	
Norfolk & Western.....		1927	2,231	729,474	880,906	31,430	23,618	58.5	1,943,072	1,021,246	548	44	7.5	190	
		1926	2,231	933,810	1,143,604	52,044	30,488	58.0	2,611,470	1,428,912	535	53	9.0	73	
Southern Region:															
Atlantic Coast Line.....		1927	5,103	724,790	728,095	13,175	17,359	58.8	1,004,098	374,175	415	56	11.8	82	
		1926	4,963	832,347	836,897	15,125	20,918	58.3	1,224,641	459,960	439	45	9.4	59	
Central of Georgia.....		1927	1,898	254,317	255,739	6,839	5,832	66.3	322,421	129,466	138	19	12.4	15	
		1926	1,905	319,210	322,359	5,565	7,133	65.7	412,429	175,828	159	14	7.8	10	
Ill. Cent. (inc. Y. & M. V.).....		1927	6,594	1,971,324	1,985,528	44,966	48,535	57.9	3,353,576	1,411,151	769	102	11.7	21	
		1926	6,555	2,063,597	2,077,121	48,060	52,372	59.1	3,566,904	1,550,616	781	102	11.5	7	
Louisville & Nashville.....		1927	5,053	1,558,992	1,617,188	53,744	30,469	58.1	2,136,591	1,016,791	614	105	14.6	62	
		1926	5,018	1,803,135	1,880,863	62,560	33,238	56.4	2,397,780	1,144,640	602	106	15.0	5	
Seaboard Air Line.....		1927	4,282	546,109	557,409	10,414	13,279	60.3	786,536	291,719	227	59	20.7	20	
		1926	4,009	626,147	639,085	10,546	15,341	58.3	948,736	370,720	253	39	13.5	...	
Southern Railway System.....		1927	8,021	1,756,834	1,785,958	32,656	42,849	61.6	2,448,896	950,769	1,044	166	13.7	101	
		1926	8,050	2,068,151	2,101,450	38,328	47,486	59.0	2,873,923	1,137,664	1,093	160	12.7	29	
Northwestern Region:															
Chi. & North Western....		1927	8,463	1,318,988	1,379,143	24,319	30,031	61.8	1,793,824	705,192	814	121	13.0	175	
		1926	8,461	1,512,231	1,557,766	28,383	32,862	61.1	1,997,198	788,657	758	167	18.0	137	
Chi., Milw. & St. P.....		1927	11,249	1,626,983	1,752,119	106,946	42,102	64.2	2,507,760	1,076,272	831	138	14.2	175	
		1926	11,197	1,650,935	1,765,054	105,208	43,148	63.6	2,567,067	1,121,136	801	184	18.7	142	
Chi., St. P., Minn. & Om.....		1927	1,724	340,569	381,983	20,288	6,218	62.5	363,180	150,738	159	25	13.3	20	
		1926	1,724	323,161	345,831	18,069	5,832	62.4	337,371	137,600	156	35	18.2	2	
Great Northern		1927	8,164	774,536	804,791	45,660	22,773	71.9	1,292,987	604,009	559	103	15.6	129	
		1926	8,164	782,735	809,346	48,285	23,548	69.7	1,325,590	610,381	582	134	18.7	130	
Minn., St. P. & S. Ste. M.....		1927	4,358	517,967	531,848	5,545	11,373	69.6	603,099	270,202	208	34	14.2	19	
		1926	4,368	517,867	532,943	4,254	11,171	65.6	607,929	261,633	304	25	7.6	20	
Northern Pacific		1927	6,476	775,992	828,025	49,389	22,178	73.3	1,211,969	559,747	460	149	24.4	63	
		1926	6,510	738,289	778,161	46,431	21,982	74.0	1,189,352	542,169	500	130	20.6	92	
Oreg.-Wash. R. R. & Nav.....		1927	2,154	197,174	208										

pared with December, 1926, for Roads with Annual Operating Revenues above \$25,000,000.

Region, road and year	Average number of freight cars on line			Per cent un-serv-ice-able	Gross ton-miles per train-hour, ex-cluding loco-motive and tender	Gross tons per train, ex-cluding loco-motive and tender	Net tons per train	Net tons per loaded car	Net ton-miles per car-day	Car miles per car-day	Net-ton miles per mile of road per day	Pounds of coal per 1,000 gross ton-mile including loco-motive and tender	Locomotive miles per loco-motive day
	Home	Foreign	Total										
New England Region:													
Boston & Albany.....1927	3,848	4,935	8,783	2.9	16,801	1,228	447	19.5	336	27.0	7,248	203	65.1
1926	2,335	5,968	8,303	2.8	13,606	1,059	416	21.6	421	30.2	8,582	219	85.5
Boston & Maine.....1927	13,068	12,440	25,508	7.4	13,874	1,310	489	20.1	300	23.0	3,684	143	61.7
1926	12,372	15,474	27,846	6.4	13,171	1,285	515	20.8	291	20.4	3,799	155	55.3
N. Y., New H. & Hart...1927	18,663	16,518	35,181	11.2	17,619	1,372	530	20.7	278	20.8	4,570	138	56.5
1926	17,972	24,763	42,735	16.8	16,539	1,394	580	22.8	265	17.7	5,281	151	58.5
Great Lakes Region:													
Delaware & Hudson.....1927	9,836	5,412	15,248	4.0	19,846	1,712	785	29.3	558	31.8	9,728	169	59.4
1926	8,183	7,937	16,120	4.6	19,401	1,752	844	32.1	643	33.4	11,843	151	67.1
Del., Lack. & Western...1927	18,785	6,736	25,521	3.8	21,302	1,748	731	23.8	472	29.9	12,064	159	69.0
1926	16,439	11,231	27,670	3.5	19,657	1,700	736	24.9	507	30.4	14,033	170	77.5
Erie (inc. Chi. & Erie)...1927	34,383	17,466	51,849	4.4	27,152	2,193	909	25.1	531	33.7	11,882	139	64.8
1926	33,875	23,446	57,321	7.2	23,803	2,103	938	28.1	556	31.4	13,745	145	63.2
Lehigh Valley .....1927	23,681	8,656	32,337	9.6	23,899	1,735	717	24.9	391	25.6	9,393	166	49.4
1926	21,549	13,138	34,687	7.1	22,184	1,727	767	27.5	464	27.2	11,951	177	55.8
Michigan Central .....1927	23,926	12,286	36,212	3.8	27,771	1,732	599	19.6	277	23.5	5,096	128	63.4
1926	18,350	16,451	34,801	3.3	24,487	1,722	629	20.8	314	25.0	6,677	124	53.3
New York Central.....1927	78,241	63,454	141,695	4.2	27,640	2,177	900	25.5	597	26.0	8,677	124	53.8
1926	62,608	76,901	139,509	2.7	25,264	2,184	962	28.8	518	30.4	11,141	135	65.3
New York, Chi. & St. L..1927	15,561	9,274	24,835	5.6	24,257	1,730	634	20.8	509	39.7	7,596	120	72.6
1926	12,271	10,521	22,862	5.3	21,962	1,646	643	22.3	433	45.1	8,698	131	76.3
Pere Marquette .....1927	11,391	6,803	18,194	3.8	18,739	1,465	609	25.6	417	27.4	3,479	119	57.4
1926	9,900	8,571	18,471	3.7	15,946	1,342	563	25.5	231	26.9	3,533	134	63.6
Pitts. & Lake Erie.....1927	16,202	5,665	21,867	5.7	28,697	2,563	1,413	45.9	317	8.6	21,864	118	50.6
1926	9,024	11,318	20,342	3.6	26,536	2,513	1,410	45.0	352	13.5	30,933	119	72.5
Wabash .....1927	18,110	10,133	28,243	2.4	25,899	1,615	605	21.4	487	35.9	5,513	142	65.2
1926	14,647	11,713	26,360	2.4	23,383	1,602	624	23.0	591	41.3	6,235	152	68.6
Central Eastern Region:													
Baltimore & Ohio.....1927	79,194	26,606	105,800	5.1	20,365	1,801	835	31.4	470	25.1	8,994	172	58.8
1926	67,156	39,876	107,032	4.0	17,881	1,843	884	33.7	585	29.8	11,37	187	71.2
Central of New Jersey...1927	16,391	13,677	30,068	5.7	18,801	1,799	846	31.8	231	12.7	10,064	172	48.3
1926	16,275	14,601	30,876	4.3	15,943	1,757	851	33.6	262	13.5	11,697	189	46.0
Chicago and Eastern Ill..1927	13,839	3,547	17,386	31.4	21,205	1,539	708	30.6	368	20.3	6,766	157	60.9
1926	12,582	4,334	16,916	24.4	21,137	1,602	762	31.7	464	24.5	8,304	157	67.7
Clev., Cin., Chi. & St. L.1927	25,016	19,706	44,722	3.7	24,955	1,899	886	31.1	457	24.3	8,621	140	58.0
1926	15,466	22,007	37,473	4.8	23,678	1,948	901	32.5	626	34.1	9,864	140	65.9
Elgin, Joliet & Eastern...1927	9,690	6,146	15,836	5.3	14,428	2,020	1,034	39.8	275	11.2	9,466	150	50.9
1926	9,489	7,030	16,519	3.5	13,798	2,072	1,066	42.0	291	11.9	10,444	153	54.2
Long Island .....1927	1,683	4,237	5,920	1.4	4,388	779	297	25.3	72	5.1	1,075	341	32.9
1926	1,533	5,873	7,406	1.0	4,183	768	294	25.7	58	4.1	1,085	372	33.9
Pennsylvania System ....1927	224,524	69,346	293,870	6.1	22,631	1,989	903	30.2	382	20.5	10,353	142	46.7
1926	206,073	97,701	303,774	5.5	18,441	1,805	856	33.0	477	23.8	13,304	157	60.6
Reading .....1927	29,971	11,628	41,599	2.0	20,350	1,847	910	36.0	415	20.2	15,277	164	56.2
1926	20,939	21,481	42,420	2.7	18,804	1,833	957	38.7	544	24.0	20,442	176	75.0
Pocahontas Region:													
Chesapeake & Ohio.....1927	36,032	8,710	44,742	3.0	29,679	2,445	1,299	43.2	1,016	42.7	16,803	107	61.0
1926	31,324	12,900	44,224	2.9	26,331	2,567	1,388	45.2	1,331	54.5	22,201	111	74.6
Norfolk & Western.....1927	34,651	6,765	41,416	1.1	36,517	2,664	1,400	43.2	795	31.5	14,763	151	49.7
1926	32,365	11,127	43,492	1.0	33,977	2,797	1,530	46.9	1,060	39.0	20,657	156	65.5
Southern Region:													
Atlantic Coast Line.....1927	25,690	9,792	35,482	5.8	18,530	1,385	516	21.6	340	26.9	2,365	121	50.8
1926	22,594	14,752	37,346	3.0	17,909	1,471	553	22.0	397	31.0	2,989	128	56.8
Central of Georgia.....1927	5,199	4,314	9,513	4.1	17,803	1,268	509	22.2	439	29.8	2,201	147	54.0
1926	4,834	6,004	10,838	3.7	18,023	1,292	551	24.6	523	32.3	2,978	149	61.5
Ill. C. (inc. Y. & M. V.)..1927	45,364	18,795	64,159	6.1	22,900	1,701	716	29.1	710	42.1	6,903	147	75.2
1926	42,204	25,020	67,224	3.4	21,702	1,728	751	29.6	744	42.6	7,631	147	77.7
Louisville & Nashville...1927	45,209	14,173	59,382	9.6	16,430	1,370	652	33.4	552	28.5	6,491	171	74.9
1926	42,392	19,250	61,642	9.8	15,108	1,330	635	34.4	599	30.9	7,358	177	88.6
Seaboard Air Line.....1927	16,683	8,944	25,627	7.1	18,015	1,440	534	22.0	367	27.7	2,197	148	63.9
1926	14,528	11,993	26,521	3.7	17,030	1,515	591	24.1	450	32.0	2,980	144	71.7
Southern Railway System..1927	59,929	23,248	83,177	7.3	18,902	1,394	541	22.2	369	27.0	3,824	166	48.5
1926	56,102	29,585	85,687	5.7	17,471	1,390	550	24.0	428	30.3	4,559	166	55.1
Northwestern Region:													
Chi. & North Western...1927	47,417	25,102	72,519	5.6	16,927	1,360	535	23.5	314	21.6	2,688	155	48.4
1926	49,018	27,564	76,582	6.2	16,731	1,321	522	24.0	332	22.7	3,007	148	55.3
Chi., Milw. & St. P.....1927	52,414	20,439	72,853	4.9	19,537	1,541	662	25.6	477	29.1	3,086	159	61.9
1926	53,535	22,848	76,383	5.3	18,885	1,555	679	26.0	473	28.7	3,230	163	61.3
Chi., St. P., Minn. & Om.1927	2,737	10,135	12,872	10.2	12,654	1,066	443	24.2	378	24.9	2,821	159	70.6
1926	3,388	8,806	12,194	14.9	12,693	1,044	426	23.6	364	24.7	2,575	166	61.6
Great Northern.....1927	42,093	11,120	53,213	4.4	19,410	1,669	780	26.5	366	19.2	2,387	177	41.4
1926	41,850	12,008	53,858	5.1	19,740	1,694	780	25.9	366	20.2	2,412	165	38.7
Minn., St. P. & S. Ste. M.1927	20,419	5,034	25,453	3.6	13,9,								

News of the Week

(Continued from page 469)

over developed or are being depressed thereby." One of the directions of the resolutions is "to ascertain whether the railroad companies are endeavoring to depress the labor cost of coal produced by union mine labor."

The Reed amendment brought out a lively discussion of the lake cargo coal rate case. It was opposed by several senators on the ground that such an investigation, if undertaken, should be considered separately. Senators Neely, of West Virginia, and Swanson and Glass, of Virginia, who have severely criticised the commission's decisions in this case,

opposed the Reed amendment on the ground that the Senate should not make its investigation while the case is pending before the commission. Senator Neely said that he was compelled to believe that Commissioner Esch was "either consciously or unconsciously influenced" in his position in the case by his desire for reappointment.

Senator Willis, of Ohio, expressed the opinion that it was "to say the least, indelicate" for the Senate to be discussing a case pending before the commission. Senator Swanson said that when the commission's decision shall have been rendered, if it is adverse to the claims of the senator from Pennsylvania,

it would be proper to have an investigation, and that "on the other hand, if it shall be decided adverse to the vast interests of Virginia, West Virginia, Kentucky and Tennessee, we would ask for an investigation with a view of ascertaining whether or not the law ought to be amended; whether such power and authority ought to be given to the Interstate Commerce Commission."

Illinois Central Plans for Consolidation of Four Chicago Stations

The Illinois Central has prepared plans and cost estimates covering the use of that railroad's proposed new passenger station at Roosevelt Road, Chicago, by

Operating Revenues and Operating Expenses of Class I Steam Railways in the United States

Compiled from the Monthly Reports of Revenues and Expenses for 183 Steam Railways, Including 15 Switching and Terminal Companies.

Item	United States		Eastern District		Pocahontas Region		Southern Region		Western District	
	1927	1926	1927	1926	1927	1926	1927	1926	1927	1926
Average number of miles operated	238,837.96	238,185.45	59,262.14	59,450.48	5,609.97	5,605.61	39,801.22	39,446.20	134,164.63	133,683.16
Revenues:										
Freight	\$334,741,899	\$384,863,828	\$141,091,427	\$172,583,172	\$16,666,575	\$22,172,501	\$46,284,761	\$53,705,335	\$130,699,136	\$136,402,820
Passenger	81,989,552	89,722,225	41,804,923	44,214,559	1,636,901	1,978,852	11,135,558	12,972,378	27,412,170	30,556,436
Mail	9,965,525	9,829,439	3,754,975	3,701,507	211,981	221,253	1,432,821	1,424,601	4,565,748	4,482,078
Express	14,229,820	14,544,906	5,999,597	6,628,362	345,894	329,920	1,970,607	1,956,493	5,913,722	5,630,131
All other transportation	15,809,180	17,098,679	8,500,747	9,277,299	216,098	280,242	912,141	1,174,523	6,180,194	6,366,615
Incidental	9,966,878	10,896,258	5,484,038	5,647,516	336,416	527,470	1,078,413	1,280,323	3,068,011	3,440,949
Joint facility—Cr.	1,266,885	1,165,530	421,904	470,105	20,352	22,341	126,187	142,885	698,442	530,199
Joint facility—Dr.	371,427	427,258	143,374	147,973	1,852	2,040	37,653	34,966	242,279	242,279
Ry. operat'g revenues	467,598,312	527,693,607	206,914,237	242,374,547	19,432,365	25,530,539	62,902,835	72,621,572	178,348,875	187,166,949
Expenses:										
Maintenance of way and structures	69,741,562	70,346,161	31,189,486	31,289,444	2,532,702	3,395,133	9,187,740	10,278,834	26,831,634	25,382,750
Maintenance of equipm't	99,204,064	109,790,898	45,804,691	54,506,973	3,754,503	4,903,544	13,427,791	14,365,278	36,217,079	36,015,103
Traffic	10,221,528	10,172,335	3,795,968	3,711,451	267,682	276,483	1,895,862	1,913,851	4,262,016	4,270,550
Transportation	179,494,662	199,127,088	84,140,960	97,194,261	5,687,624	7,165,603	23,071,616	25,847,135	66,594,462	68,920,089
Miscellaneous operat'ns	4,594,063	4,666,687	2,201,972	2,344,290	79,762	86,594	499,360	462,683	1,812,969	1,773,120
General	16,621,788	16,943,666	7,690,401	7,874,004	587,140	532,375	2,229,971	2,192,502	6,114,276	6,344,785
Transportation for investment—Cr.	2,077,759	2,205,919	355,616	672,608	17,686	34,094	246,709	357,018	1,457,748	1,142,199
Ry. operat'g expenses	377,799,908	408,840,916	174,467,862	196,247,815	12,891,727	16,325,638	50,065,631	54,703,265	140,374,688	141,564,198
Net revenue from railway operations	89,798,404	118,852,691	32,446,375	46,126,732	6,540,638	9,204,901	12,837,204	17,918,307	37,974,187	45,602,751
Railway tax accruals	25,973,684	30,224,433	9,872,746	11,656,417	1,667,160	2,537,886	3,791,651	4,373,243	10,642,127	11,656,887
Uncollectible ry. rev's.	164,846	400,699	47,690	286,643	2,900	6,272	46,154	50,033	68,102	70,295
Ry. operating income	63,659,874	88,227,559	22,525,939	34,183,672	4,870,578	6,673,287	8,999,399	13,495,031	27,263,958	33,875,569
Equip't rents—Dr. bal.	6,316,374	6,096,643	3,283,246	3,306,171	449,934	346,941	513,475	578,405	2,969,587	2,559,008
Joint facility rent—Dr. balance	2,009,880	2,000,516	1,017,650	1,179,409	4,282	58,118	102,626	154,408	885,322	608,581
Net railway operating income	55,333,620	80,130,400	18,225,043	29,698,092	5,316,230	6,962,110	8,383,298	12,762,218	23,409,049	30,707,980
Ratio of expenses to revenues (per cent)...	80.80	77.48	84.32	80.97	66.34	63.95	79.59	75.33	78.70	75.64

FOR TWELVE MONTHS ENDED WITH DECEMBER, 1927 AND 1926										
Average number of miles operated	238,674.46	237,968.40	59,413.09	59,548.22	5,607.50	5,604.20	39,716.32	39,334.84	133,937.55	133,481.14
Revenues:										
Freight	4,648,505,688	4,820,516,560	2,013,589,307	2,125,839,991	245,189,548	255,561,882	627,086,560	663,094,492	1,762,640,273	1,776,020,195
Passenger	976,366,124	1,043,950,355	503,139,018	524,476,146	20,017,441	22,060,978	127,300,033	152,300,498	325,909,632	345,112,733
Mail	95,978,893	96,258,816	36,479,212	36,606,364	2,430,305	2,459,917	14,199,477	14,396,515	42,869,899	42,796,020
Express	143,371,882	149,179,897	67,145,929	70,633,213	3,320,598	3,292,366	18,301,479	19,735,176	54,603,876	55,519,142
All other transportation	204,731,107	211,044,869	115,093,468	119,736,568	2,501,169	2,810,984	11,203,992	12,897,964	75,932,478	75,599,353
Incidental	128,870,449	135,826,926	65,036,100	67,757,768	4,474,841	5,411,027	13,643,089	15,974,659	45,716,419	46,683,472
Joint facility—Cr.	14,077,167	13,447,859	5,551,412	5,378,048	184,465	176,908	1,864,259	1,709,595	6,477,031	6,183,308
Joint facility—Dr.	4,876,210	4,929,934	1,640,484	1,632,493	27,938	27,043	411,401	413,979	2,796,387	2,856,419
Ry. operat'g revenues	6,207,025,100	6,465,295,348	2,804,393,962	2,948,795,605	278,090,429	291,747,019	813,187,488	879,694,920	2,311,353,221	2,345,057,804
Expenses:										
Maintenance of way and structures	878,289,313	877,876,952	369,040,026	374,099,687	38,663,227	39,954,186	119,454,131	128,478,667	351,131,929	335,344,412
Maintenance of equipm't	1,228,881,857	1,294,658,328	581,143,225	628,785,167	57,463,366	58,605,902	163,213,428	170,226,582	427,061,838	437,040,677
Traffic	120,598,615	115,039,315	44,849,868	42,215,860	3,177,944	3,020,621	21,025,273	20,629,186	51,545,530	49,173,648
Transportation	2,167,934,776	2,215,194,312	1,026,570,822	1,051,305,833	73,211,900	76,379,748	285,420,071	302,901,790	782,731,983	784,606,941
Miscellaneous operat'ns	56,185,296	56,570,390	26,124,732	26,380,746	988,512	1,074,978	6,057,887	6,596,458	23,014,165	22,518,208
General	192,904,442	186,488,551	88,016,719	85,214,693	6,777,299	6,150,872	25,260,233	24,392,951	72,850,191	70,730,035
Transportation for investment—Cr.	17,673,525	17,279,517	3,103,663	2,759,469	559,690	615,579	1,602,412	3,069,239	12,407,760	10,835,230
Ry. operat'g expenses	4,627,120,774	4,728,548,331	2,132,641,729	2,205,242,517	179,722,558	184,570,728	618,828,611	650,156,395	1,695,927,876	1,688,578,691
Net revenue from railway operations	1,579,904,326	1,736,747,017	671,752,233	743,553,088	98,367,871	107,176,291	194,358,877	229,538,525	615,425,345	656,479,113
Railway tax accruals	380,638,262	395,197,043	154,927,088	162,423,061	21,373,022	21,889,005	50,761,395	54,301,616	153,576,757	156,583,361
Uncollectible ry. rev's.	1,513,094	1,876,905	578,144	1,003,878	48,846	28,714	263,930	237,309	622,174	607,004
Ry. operating income	1,197,752,970	1,339,673,069	516,247,001	580,126,149	76,946,003	85,258,572	143,333,552	174,999,600	461,226,414	499,288,748
Equip't rents—Dr. bal.	87,458,319	83,156,019	44,657,589	43,996,373	5,963,701	6,459,329	5,941,995	10,366,998	42,822,436	35,251,977
Joint facility rent—Dr. balance	24,952,387	23,513,963	12,138,497	11,018,990	1,088,996	1,154,829	1,202,811	1,428,086	10,522,083	9,912,058
Net railway operating income	1,085,342,264	1,233,003,087	459,450,915	525,110,786	81,820,708	90,563,072	136,188,746	163,204,516	407,881,895	454,124,713
Ratio of expenses to revenues (per cent)...	74.55	73.14	76.05	74.78	64.63	63.26	76.10	73.91	73.37	72.01

^a Includes \$3,189,469 sleeping and parlor car surcharge. ^b Includes \$3,324,255 sleeping and parlor car surcharge. ^c Includes \$40,194,890 sleeping and parlor car surcharge. ^d Deficit or other reverse items. ^e Includes \$41,539,392 sleeping and parlor car surcharge.

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

the railroads now entering the Central, Grand Central, Dearborn and La Salle Street stations and abandonment of those terminals. The plans were presented to the Baltimore & Ohio, as a representative of the railroads using the Grand Central station, and to the Chicago & Western Indiana and the Atchison, Topeka & Santa Fe for the Dearborn station group, on February 13, the Chicago, Rock Island & Pacific and the New York Central having previously expressed an unwillingness to move from the La Salle Street station to a location near the lake front.

While detailed cost figures on the operation of this lake front terminal, with between 10 and 12 railroads as tenants, were not made public it was announced that the companies named were invited to share in the expenses on a usage basis. Estimates were made of the cost per car handled, enabling the railroads to compare them with present terminal expenses and with estimated expenses for the use of other proposed terminal combinations. F. L. Thompson, vice-president in charge of terminal improvements of the Illinois Central, in transmitting the plans, expressed the conviction that operations can be carried on in this lake front station as economically as in a station built on any other location.

Particular attention has been given to the problem of caring for automobiles; layout also shows in detail the relation of the station location to the lines by which all the railroads involved enter the city, to the business district, to streets and boulevards and to local transportation agencies.

The station plan provides for 22 tracks on a single level and contemplates the construction of additional locomotive terminal and car facilities together with the accompanying mail, baggage and express accommodations. Some of the railroads from the East and South would enter the terminal by utilizing the Illinois Central tracks from a point in the vicinity of Ninety-fifth street. The roads entering from the Southwest and West would be brought into the terminal over a connecting line which the Illinois Central is prepared to build in the vicinity of Eighteenth Street. In anticipation of this development, such a railroad was provided for in the city ordinances under which that railroad has been carrying on the project for the improvement and enlargement of its Chicago terminal.

Rebuilt Car Rule Found Unreasonable

American Railway Association, Mechanical Division interchange rule 112, in so far as it affects settlements to be made for rebuilt freight cars when badly damaged or destroyed on the lines of railroads other than their owners, was found to be unreasonable in a decision made public by the Interstate Commerce Commission on February 16 on a complaint filed by the Bangor & Aroostook. The complaint was based on an inter-

pretation by the arbitration committee under which, if any material in the structure above the trucks is reclaimed, the entire car is depreciated, for settlement purposes, from the date of original construction of the unit from which the re-used part was obtained.

In place of the existing rule the commission prescribes a rule containing some modifications of one that was proposed by a special committee of railway mechanical officers.

The findings of the Commission's report are as follows:

"The freight cars which have been rebuilt under the sanction of the interchange rules and which are now in service will continue to circulate until their interchange is restricted, irrespective of the character of settlement rule which is applied when such units are destroyed on the lines of railroads other than their owners. Hence, as regards equipment rebuilt in the past, it is unlikely that the establishment or non-establishment of a rebuilt-car settlement rule will materially affect the matter of safety in railway operation. Under instructions to bring in a rebuilt-car rule, the special committee on rebuilt cars, consisting of 10 prominent railroad mechanical officers, formulated a proposed rule which is apparently designed to effect substantial justice as between car owners and users.

They suggested, in part that as applied to units reconstructed in the past a rebuilt-car settlement rule should be confined to cars in classes A to E-2, and as regards those reconstructed in the future only classes from A to D should be recognized.

"We find that as to past and future, a rebuilt freight car is one which the carrier was, is now, or in the future may be required by the accounting rules of the commission to record in equipment-investment account. We further find that for freight cars rebuilt in the future, that portion of the proposed rule formulated by the special committee on rebuilt cars, which contemplates settlement for cars of classes A to D on basis of 80 per cent of reproduction cost new, less depreciation from date rebuilt, will be reasonable if modified to conform with the foregoing definition of what constitutes a rebuilt car. As to freight cars reconstructed in the past, we find that the present rule is unreasonable, and that for the future a rule which provides for settlement for cars in classes A to D on basis of 80 per cent of reproduction cost new, less depreciation from date rebuilt, cars of classes E-1 and E-2 on basis of 70 per cent of reproduction cost new less depreciation from date rebuilt, and cars of classes E-3 and E-4 on basis of 60 per cent of reproduction cost new less depreciation from date rebuilt, will be reasonable.

"No order will be entered at this time, but defendants will be expected to modify their rules to conform with our conclusions herein. If this is not done within a reasonable period, complainants may bring the matter to our attention for appropriate action."

Traffic

The Eastern Kentucky Railway has discontinued the operation of trains into its northern terminus, thus closing a traffic career which has extended over more than 50 years. The line from Webbville, Ky., the southern terminus, northward to Grayson, 13 miles, is to be kept in operation, pending an application before the Interstate Commerce Commission, requesting authority to abandon the line. The last time-table in the Official Guide, dated, 1927, shows one train a day each way from Webbville, northward, to Riverton, 36 miles.

Running Time of California Trains to Be Cut

The Atchison, Topeka & Santa Fe, the Chicago Rock Island & Pacific in conjunction with the Southern Pacific, and the Chicago & North Western in conjunction with the Union Pacific will establish schedules of 61 hr. 15 min. from points in California to Chicago on March 4. The trains which will be affected include the Chief, the Golden State Limited, the Los Angeles Limited, and the San Francisco Overland Limited. West-bound schedules will not be changed from the present 63 hours. The chief purpose of the reduction is to enable east-bound passengers to make early connections at Chicago.

Meat Rates Revised

A revision of freight rates, based on mileage scales, on fresh meats and packing house products, including lard substitutes and vegetable cooking oils, in straight and mixed carloads, between points in the southwest and between the southwest and western trunk line territory, has been prescribed by the Interstate Commerce Commission in lieu of a revision proposed by the railroads, which was found not justified. The suspended schedules were ordered canceled without prejudice to the establishment of rates on the bases found reasonable. Rates on fresh meats and packing house products from points in western trunk line territory to destinations in southwestern territory were found unreasonable in the past and reparation was awarded.

S. P. To Furnish Parking Space for Passengers

The Southern Pacific is preparing plans for the installation of free automobile parking stations for its patrons, adjacent to stations where ground space and facilities permit. Thirty-seven railway stations in California have already been selected for this service and actual preparatory work will be commenced immediately. No charge will be made for the parking, which will be a convenience to patrons. The purpose of this plan is to eliminate any delay or inconvenience to the motorist who drives from his home to the railway station. This innovation will permit

him to park his car when he leaves by train for his destination and drive away immediately when he returns. Eventually a total of several thousand acres of Southern Pacific property adjoining its stations in various parts of the system will be devoted to this service. The new plan will be put into practice first in the populous parts of northern and southern California. The 37 cities selected at the present time are located in all parts of California, but other free parking stations will probably be installed in Oregon, Utah, Nevada, Arizona, and New Mexico.

Canadian Industrial Traffic League

The annual General Meeting of the Canadian Industrial Traffic League was held in Montreal January 20. Reports of were submitted and new business transacted before a large number of members representative of the large firms in Ontario and Quebec. The membership of the league was increased by over 20 new members. New members are now coming in from the Western provinces and it is expected that new members will be coming in from the Maritimes in the near future. Reports were submitted by the educational committee and also the car rental and storage committee. Much discussion followed the reading of the report of the special committee dealing with the establishment of an international railway tribunal.

Officers elected for the ensuing year include: Honorary president, J. E. Walsh, Canadian Manufacturers' Association, Toronto; hon. vice-presidents, T. Marshall, Toronto Board of Trade; J. K. Smith, Montreal Board of Trade; D. McLean, Hamilton Chamber of Commerce; F. E. Hamilton, Winnipeg Board of Trade; president, E. J. C. Finch, Montreal; vice-president, F. W. Dean, Hamilton; treasurer, H. W. Blahout, Toronto; general secretary, R. W. McLeay, Toronto.

Freight Traffic in 1927

The volume of freight traffic handled by the Class I railroads in 1927 amounted to 474,682,943,000 net ton-miles, according to compilation by the Bureau of Railway Economics. This was a decrease of 14,018,882,000 net ton-miles, or 2.9 per cent, below the volume of freight traffic in 1926 but an increase of 18,595,711,000 net ton-miles, or 4.1 per cent, above that of 1925.

In the Eastern district, there was a decrease of 4.8 per cent, while the Southern district showed a decrease of 4.4 per cent. The western district reported an increase of one-half of one per cent.

In December, freight traffic handled by the Class I railroads amounted to 34,579,981,000 net ton-miles, a decrease of 5,535,929,000 net ton-miles, or 13.8 per cent, below that of the same month in 1926. In the Eastern district, the volume of freight showed a decrease of 20.4 per cent, while the Southern district reported a decrease of 14.3 per cent. The Western district reported a decrease of 3.2 per cent.

The daily average movement of freight

cars in 1927, according to reports filed by the carriers with the Bureau of Railway Economics, was 30.4 miles per day. This was the same as that for 1926 but was an increase of 1.9 miles above the daily average for 1925 and 3.6 miles above the average for 1924. The highest daily average for any month was established by the railroads in October, 1927, when an average of 34.7 miles was attained.

The average load per freight car in 1927 including less than carload freight as well as carload freight, was 27.2 tons. This was a decrease of two-tenths of one ton under the average for 1926 but an increase of two-tenths of a ton above the average for both 1925 and 1924.

Livestock Investigation

The hearing before representatives of the Interstate Commerce Commission in the investigation of live stock rates in the western district, which opened on February 6 at Chicago, ended there on February 15 and was resumed at Kansas City on February 17.

L. E. Wettling, manager of the statistical bureau, of the Western lines testified that since the passage of the Hoch-Smith resolution on January 30, 1925, the so-called "post-war agricultural depression" upon which that resolution was based, has disappeared as regards the live stock industry. There was a gradual improvement in live stock from 1921 through 1924, and 1922 was characterized as a fairly satisfactory year for cattle feeders, while by 1923, the high industrial activity had created a good market for good beef. Finally, in 1924 the secretary of agriculture reported that the live stock industry of the country was on a firmer foundation than at any time since the price collapse in 1920.

As contrasted with this rapidly increasing prosperity Mr. Wettling said the net earnings of the Western roads in the first 11 months of 1927 showed a reduction of 9 per cent, or approximately 40 million dollars under the corresponding months of 1926. Net earnings in the Northwestern region declined 12 million dollars, in the Central Western region 18 million, and in the Southwestern region nine million. The Northwestern roads, in the first eleven months of 1927 were earning a return at the annual rate of 3.6 per cent on their property investment; the Central Western roads 4.4 per cent, and the Southwestern 4.1 per cent. The roads in Western Trunk Line territory last year earned a return of only 3 per cent.

The average revenue per train mile received by the railways from live stock trains was only \$9.91, while the corresponding revenue per train-mile from all other traffic were \$13.25. On the other hand, the average cost of fuel and wages paid by the railways per one thousand net ton-miles was \$1.21 in the case of live stock traffic, 82 cents in the case of perishable fruit and vegetable traffic, and 78 cents in the case of all other traffic.

H. E. Pierpont, chief traffic officer of the Chicago, Milwaukee, St. Paul & Pacific testified that this road's average earnings per car on edible live stock dur-

ing the year 1916 were \$34.35, while the revenue per car on all carload freight was \$45.58. In 1926, the revenue per car on edible live stock was \$50.13, while on all carload freight it was \$68.60. In 1916 the live stock revenue per car was 75.4 per cent of the corresponding revenue on all carload freight, while in 1926 the live stock revenue per car was only 73.1 per cent of the revenue per car on all carload freight. On anthracite coal \$71.45 is received for a haul of 193 miles, and on bituminous coal for 173 miles the carrier receives \$63.02 per car. On salt for 282 miles the revenue per car was \$73.34, iron and steel articles \$91.76 for 282 miles, cement \$67.86 for 162 miles, brick \$46.57 for 154 miles.

A. F. Cleveland, assistant freight traffic manager of the Chicago & North Western, testified that in 1926 the transportation of live stock on the North Western required approximately 13 per cent of the total mileage run by loaded freight cars. This 13 per cent of the total loaded freight car mileage, which was necessary in the handling of live stock produced, however, only 9 per cent of the gross freight revenues in that year. In other words, ignoring the many special services in connection with live stock traffic, this traffic, on the basis of loaded car mileage alone, is not paying its fair proportion of railway revenues.

C. E. Spens, vice-president of the Chicago, Burlington & Quincy, said that live stock does not contribute the percentage of the total carload revenue which it should, based on the percentage of cars required for its transportation. Of all carload traffic, live stock uses 16 per cent of the total number of cars, but pays less than 10 per cent of the total carload revenues. The average earnings per car mile on all carload traffic, excluding live stock, are 50 per cent greater than the average car mile earnings on live stock.

The average gross earnings per car on all carload traffic, on the Burlington, excluding live stock, in one year were \$82, while the average earnings per car on live stock were \$51. The direct freight operating expenses consumed more than 68 per cent of the freight revenues, so on this basis, the average cost per car of transporting carload freight was \$53.27. As the average gross earnings on live stock per car were but \$51, on the basis of this computation, live stock as a whole was transported at a loss. This calculation, too, excludes the many known additional costs which are entailed in the transportation of live stock.

Peach Rates Ordered Reduced Under Hoch-Smith Resolution

A reduction in freight rates on peaches from Georgia and North and South Carolina to destinations in southern and official classification territories and to St. Paul, Minneapolis, Des Moines, Omaha and Kansas City is ordered by the Interstate Commerce Commission effective on April 20, in a decision made public on February 17 on complaints filed by the Georgia Peach Growers' Exchange and others, predicated on the principles of the

Hoch-Smith resolution and as necessary to promote the freedom of movement of a commodity affected by existing depression. The report refers to testimony that until about 1919 the peach-growing industry was prosperous but that since that time it has as a rule resulted in losses or little or no profits. It is stated that this condition is attributed, among other things, to the alleged fact that prices have not kept pace with the increased cost of production. Reference is also made to testimony by complainants as to increasing prosperity of the southern carriers in recent years.

The new rates prescribed to destinations in central and southern territory are to be on the basis of 47 per cent of the corresponding first-class rates as shown in the mileage scales recently put into effect in the Southeastern class rate case. To the trunk-line and New England territory they are to be based on 47 per cent of the first-class rates constructed in accordance with the findings of the class rate investigation for interterritorial rates. To the cities named they are to be the rates thus prescribed to Chicago or Memphis plus 50 per cent of the contemporaneous first-class beyond. Rates to Montreal and Toronto, Canada, are found unreasonable, in so far as the transportation is within the United States, to the extent that they exceed rates as prescribed to Rouses Point and Buffalo, N. Y., plus 47 per cent of the first-class rates beyond.

The commission also finds that reasonable estimated weights per package in connection with the weights prescribed will be 51 pounds for 6-basket crates and 55 pounds per basket for bushel baskets. Reasonable minimum carload weights are also prescribed. As to reparation the report says that the rates will result in reductions in some cases and increases in others and that it cannot be said that on the whole complainants have been subjected to unreasonable charges in the past, particularly because some of the rates have been maintained on an unduly low basis and because of the improper estimated weights, which have operated to their advantage. Determination of the issues concerning refrigeration charges is deferred pending a decision in the pending case on refrigeration charges on fruits, vegetables, berries and melons from the South.

Commissioners Aitchison and Campbell, although concurring generally in the conclusion, are of the opinion that the mandate of the Hoch-Smith resolution requires a somewhat greater reduction in the rates. Commissioner Taylor dissented, saying that the rates will establish a preferential relationship between this traffic and that moving under rates prescribed in the consolidated southwestern cases, in which 50 per cent of first class was prescribed. Furthermore, he said, peaches must be transported under the highest class of expedited service and charges must be measured accordingly. He also objected because no indication is given as to how the carriers may recoup the loss in revenue, which may approximate \$500,000 per annum.

Equipment and Supplies

Locomotives

THE UNION PACIFIC has ordered 23 three cylinder 4-12-2 type locomotives and 15 additional 12 wheel tenders of 18,000 gal. capacity from the American Locomotive Company. The locomotives will have 27 by 31 in. cylinder inside and 27 by 32 in. outside, and a total weight in working order of 495,000 lb. Inquiry for this equipment was reported in the *Railway Age* of January 21.

THE ALABAMA STATE DOCKS COMMISSION has ordered a six-wheel switching locomotive from the American Locomotive Company. This locomotive will have 21 by 28 in. cylinders and a total weight in working order of 164,000 lb.

Passenger Cars

THE PAULISTA RAILWAY OF BRAZIL is inquiring through the car builders for 7 sleeping cars.

THE NEW YORK, CHICAGO & ST. LOUIS has ordered one private car from the Pullman Car & Manufacturing Corporation.

THE UNION PACIFIC has ordered 15 coaches and 10 dining cars from the Pullman Car & Manufacturing Corporation. Inquiry for this equipment was reported in the *Railway Age* of January 14.

Freight Cars

THE SOUTH MANCHURIAN RAILWAY is inquiring through the car builders for about 20 air dump cars of 45 cu. yd. capacity.

THE UNION PACIFIC has ordered 500 flat cars of 50 tons' capacity from the Bettendorf Company. Inquiry for this equipment was reported in the *Railway Age* of January 21.

THE CHICAGO BURLINGTON & QUINCY has ordered 150 Hart selective fifty-ton ballast cars with Max ends from the Rodger Ballast Car Company.

THE CONLEY TANK CAR COMPANY has ordered 50 tank cars of 40 tons capacity from the American Car & Foundry.

THE CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC is inquiring for 4,650 freight cars as follows: 1,000 Hoppers of 70 tons' capacity; 2,500 box cars of 50 tons' capacity; 650 stock cars of 40 tons' capacity; 300 automobile cars of 50 tons' capacity, and 200 75-ton ore cars.

THE WHEELING STEEL COMPANY has ordered four 20-cu. yd. and 12 30-cu. yd., lift door type, air dump cars from the Koppell Industrial Car & Equipment Company.

Iron and Steel

THE MISSOURI PACIFIC is enquiring for 3,000 tons of structural steel for a bridge over the Arkansas river at Little Rock, Ark.

THE MISSOURI-KANSAS-TEXAS is inquiring for 500 tons of structural steel for miscellaneous bridge work.

THE NORTHERN PACIFIC is inquiring for 2,000 tons of structural steel for miscellaneous bridge work.

THE RICHMOND, FREDERICKSBURG & POTOMAC will use in renewals during 1928 about 4,200 tons of 130 lb. Pennsylvania Section rail.

THE CHICAGO, ROCK ISLAND & PACIFIC has ordered 42,500 tons of rails from the Illinois Steel Company and 7,500 tons from the Inland Steel Company.

THE ATCHISON, TOPEKA & SANTA FE has ordered 15,000 tons of structural steel for its 1928 bridge work from the American Bridge Company.

Machinery and Tools

THE CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC is inquiring for one 16-in. by 8-ft. engine lathe.

THE SOUTHERN PACIFIC is inquiring for two electric cranes.

THE NORTHERN PACIFIC has ordered one three-ton mast type jib crane from H. D. Conkey & Company.

THE ATCHISON, TOPEKA & SANTA FE is inquiring for the following machine tools in addition to those reported previously: One 10-in. cold saw, two floor grinders, one 36-in. 12-ft. heavy duty slab milling machine, one 100-ton motor driven driving box press, one single-spindle motor driven cantering machine, and one 24-in. 12-ft. motor driven heavy duty engine lathe.

Signaling

THE PENNSYLVANIA has ordered from the Union Switch & Signal Company an electro-mechanical interlocking for CT tower, Keating, Pa.

THE LONG ISLAND has awarded to the Union Switch & Signal Company a contract for the complete installation of automatic flashing-light highway crossing signals at 27 crossings, all except one of which crossings are in territory where automatic block signals are in service, necessitating the cutting of the track circuits for the addition of apparatus to stop and start the crossing signals. At 13 of the crossings, change will have to be made also in automatic train control apparatus, which is in service on those parts of the road.

Supply Trade

P. M. Etters, vice-president of the **E. A. Lundy Company** has resigned.

H. M. Davidson, general manager of sales of the **Hayward Company**, has resigned.

A. N. Flora, vice-president in charge of sales of the **Trumbull Steel Company**, Warren, Ohio, has resigned.

O. D. Fries, has been appointed representative in charge of the consumer motor business in the Detroit territory for the **Lincoln Electric Company**.

The **Fawell Engineering Company**, Joseph E. Fawell, president, Pittsburgh, Pa., has been appointed exclusive representative in the Pittsburgh district for the **Birdsboro Steel Foundry & Machine Company**, Birdsboro, Pa.

William A. Wadsworth, representative of the **Oxweld Railroad Service Company**, Chicago, has resigned to become representative of the **Wood Conversion Company** with headquarters at 101 Park Avenue, New York.

J. J. Melley, master mechanic of the Missouri-Kansas-Texas with headquarters at Parsons, Kans., has resigned to become assistant to the president of the **Viloco Railway Equipment Company**, Chicago.

The **Standard Steel Car Company** has purchased the **Illinois Car & Manufacturing Company**, Chicago, and will take over operations on March 1. **P. H. Joyce**, president of the **Illinois Car & Manufacturing Company** has been elected vice-president of the **Standard Steel Car Company**.

H. G. Mastin, formerly with the **Locomotive Stoker Company** has become associated with the **Pantasote Company, Inc.**, New York, as assistant to W. A. Lake. Mr. Mastin before serving with the **Locomotive Stoker Company** was for some years with the **New York, Ontario & Western**.

Merrill W. Manz, manager of the railway material sales department of the **Ohio Brass Company**, Mansfield, Ohio, has been appointed manager of factory and sales of the **Canadian Ohio Brass Company, Limited**, with headquarters at Niagara Falls, Ontario. Mr. Manz has been associated with the **Ohio Brass organization** both in Canada and the United States for a number of years.

Donald M. Ryerson, vice-president and general manager of **Joseph T. Ryerson & Son, Inc.**, has been elected chairman of the board of directors, succeeding his father, **Edward L. Ryerson, Sr.**, who died January 19. **Edward L. Ryerson, Jr.**, vice-president in charge of plant operations and several sales divisions, succeeds his brother **Donald Ryerson** as vice-president and general man-

ager. **Everett D. Graff** has been elected a vice-president in charge of purchases. Mr. Graff joined the **Ryerson organization** upon graduation from college in 1906 and ten years later he was appointed assistant to the vice-president in charge of purchases.

George T. Johnson who has been elected third vice-president of the **Buckeye Steel Castings Company** with office



George T. Johnson

in Columbus, Ohio, was graduated from **Cornell University** in 1906. After graduation Mr. Johnson entered the service of the **Buckeye Steel Castings** and has been associated with that company continuously in the manufacturing, engineering and sales departments until his recent election to third vice-president as noted above.

P. A. Orton, Jr. who has been in charge of sales in the Chicago territory for the **Orton Crane and Shovel Company**, Chicago, has been elected vice-president and sales manager to succeed **Herbert Mertz** who has been elected vice-president in charge of sales in the New York territory. **Alex Orton**, works manager at **Huntington, Ind.**, **C. C. Case**, Chicago, and **J. L. Kenower**, Huntington, have been elected members of the board of directors. After graduating



P. A. Orton, Jr.

from **Purdue University** in 1923, Mr. P. A. Orton entered the employ of the **Orton Crane and Shovel Company** in the shop and drafting departments. Later

he was placed in charge of sales in the Chicago territory which position he has held until his recent election. Mr. Mertz was born in 1890 at Chicago and was educated at the **University of Chicago** and the **Armour Institute of Technology**. He entered railroad service in 1910 with the **Chicago, Milwaukee & St. Paul** where he was employed in surveying corps in Montana, Idaho, and Washington. Later he entered the employ of the **Illinois Central** in the same capacity and in 1912 he returned to the **Chicago, Milwaukee & St. Paul** as a designer and draftsman in the bridge department with headquarters at Chicago. In 1914 he resigned to become an engineering draftsman in the engineering department of the **City of Chicago** which position he held until 1916, when he entered the employ of **Fairbanks, Morse & Company** as a designer of reinforced concrete coaling stations. He held this position until March, 1918, when he resigned to enter the employ of the **Orton Crane and Shovel Company** as a draftsman, which position he held until January, 1920, when he was promoted to estimator and cost accountant. In December, 1920, he was promoted to assistant secretary, and



Herbert Mertz

in June, 1923, was promoted to secretary and sales manager which position he has held until his recent election.

American Brake Shoe & Foundry Company

In the consolidated profit and loss statement included in its annual report for 1927 the **American Brake Shoe & Foundry Company** shows net earnings of \$2,794,851, equivalent to \$3.28 per share on the common stock. Net earnings in 1926 were \$3,029,217. Of the net earnings \$1,677,140 was paid in dividends and the balance of \$1,117,711 was carried as surplus. A common stock dividend of 2 per cent was also paid.

Joseph B. Terbell, chairman of the board of directors, in his remarks to stockholders states:

"Under the conditions which prevailed during the year, the results obtained by your company can be considered as quite satisfactory. There was a considerable decrease in tonnage, particularly of car wheels, track material and brake shoes, all of which are sold principally to railroads. The reduction was heaviest in chilled tread car wheels due principally to the increased mileage obtained from their service and the de-

crease in the purchase of wheels for new railroad equipment. Forgings, malleable iron and manganese castings, which are sold mainly to the industrial trade, showed no diminution in tonnage.

"The year 1927 has been a period of severe competition and the present outlook is for its continuance. Manufacturers have been impressed more strongly than ever with the necessity of improving their manufacturing methods so as to effect a reduction in costs and improvement in quality of product. For your company it has meant, and will continue to mean, the closest possible analyses of all items entering into costs and such improvement in facilities as will effect reductions. The profit of last year, secured in the face of the reduction in tonnages and prices indicates that these efforts have met with a degree of success."

American Locomotive Company

The annual report of the American Locomotive Company for the year 1927 shows net income, after allowance for depreciation and Federal taxes, of \$6,391,278, equivalent after payment of the 7 per cent dividends on the preferred stock to \$4.80 per share on the company's 770,000 shares of common stock outstanding. Net income in 1926, including the operation of the Railway Steel Spring Company from May 14, totaling \$8,015,939, or \$8.16 per share on the 702,500 average number of common shares outstanding during the year. During the year the company paid \$8.00 a share on its outstanding common stock.

The excess of current assets over current liabilities on December 31, 1927 was \$48,393,735. The company had no loans payable and had in its treasury \$37,101,656 in cash and marketable securities, of which \$18,240,118 was in United States Government obligations; \$5,797,798 in railway equipment trust certificates; \$2,520,188 in bonds of the Canadian Government; \$1,301,079 in other securities; \$5,500,000 in call loans, and \$3,742,473 in cash on hand and in banks.

Selected items from the income statement follow:

	1927	1926
Net earnings from all sources:		
After deducting manufacturing, maintenance and administrative expenses	\$8,512,324	\$10,352,193
Depreciation on plants and equipment	1,694,296	1,511,954
	\$6,818,028	\$8,840,239
Accrual for Federal taxes	426,750	824,300
	\$6,391,278	\$8,015,939
Dividends, Preferred stock	2,695,000	2,280,209
Common stock	6,160,000	5,620,000
	\$8,855,000	\$7,900,209
Deficit after dividends	\$2,463,723	
Surplus		\$115,730

William H. Woodin, chairman of the company, in his remarks to stockholders, says in part:

For the past several years the number of locomotive orders received has been considerably below normal and this depression in the equipment industry was especially acute during 1927. To meet this situation your management has effected drastic curtailment of expenses in both the administrative and operating departments and the results of these economies, in conjunction with the more stable earnings of the Railway Steel Spring Company and the income derived by the company from securities owned, are reflected in the net profits shown for the year.

Formerly the equipment business closely paralleled in its fluctuations the trend of general business throughout the country. During recent years, however, this coincidence of equipment buying with the general business trend has been disturbed, due primarily to the greatly increased efficiency of railroad operations which has been

attained chiefly by the movement of heavier train loads on faster schedules and by longer locomotive runs. The loss by the railroads of a large part of the short haul business, now handled by the automobile and auto-truck, has contributed in no small degree to the release of a considerable number of locomotives for other uses.

It would seem that the time is near when, notwithstanding the increased efficiency of the railroads, the general business growth of the country will have caught up with the present equipment capacities of the railroads and the purchase of additional locomotives will then be a transportation necessity. Apart from the needs of the railroads for additional motive power, especially in the event of an abrupt increase in general business, there is still in service a large percentage of obsolete and inefficient motive power units, replacement of which with the modern locomotive offers an immediate opportunity for substantial savings in railroad operating costs.

Air Reduction Company

The annual report of the Air Reduction Company, Inc., for 1927 shows net earnings after depreciation and all of the other reserves, including federal taxes, of \$2,412,597, or \$10.74 a share on the 224,597 1-5 shares outstanding at the end of the year. The 1926 net income was \$2,262,191, or \$10.83 a share on the 208,855 shares outstanding at the end of that year.

Selected items from the consolidated income report follow:

	1927	1926
Gross income	\$13,550,940	\$12,735,030
Operating expenses	8,818,234	8,035,623
Operating income	4,732,706	4,699,407
Reserves	1,905,455	1,871,646
Net income after current charges	2,827,251	2,827,761
Special deductions from net income:		
Additional compensation to officers and employees	117,362	122,479
Net profit before federal taxes	2,709,889	2,705,282
Federal taxes	297,292	433,441
Add: Correction of estimate for 1925 federal taxes		9,650
		443,091
Net profits earned on outstanding stock	\$2,412,597	\$2,262,191

J. G. Brill Company

The annual report of this company for the year 1927 shows net profits after taxes of \$1,036,598.

The company's net sales for the year totaled \$11,876,669 as compared with \$10,416,382 in the previous year.

Selected items from the income statement follow:

	1927
Total net sales billed	\$11,876,669
Cost of sales, including operating, selling, administration and general expenses and depreciation for the year, less miscellaneous income	10,673,842
Operating profit	1,202,827
Federal income and state taxes	166,229
Net profit to earned surplus	\$1,036,598

Trade Publications

METAL CAGING. — The Mitchell-Tappen Company, New York, has issued a four-page bulletin covering its standardized metal caging for reinforced concrete fire-proofing. This bulletin sets forth the uses and advantages of this material, and lists the sizes available. It also explains how to estimate requirements, and describes methods of applying.

Construction

ALGERS, WINSLOW & WESTERN.—The Interstate Commerce Commission has made public a proposed report by Examiner Sullivan recommending denial of the application of this company for authority to build a line from a point near Littles to Algiers, Ind., with a branch from Globe to a connection with the Southern, about 15 miles.

GRAND TRUNK.—The Interstate Commerce Commission on February 20 made public a proposed report by Examiner Haskell C. Davis recommending that the commission issue a certificate authorizing the construction by the Detroit, Grand Haven & Milwaukee, the Pontiac, Oxford & Northern, and the Michigan Air Line, subsidiaries of the Grand Trunk Western system, of a belt line of 6.63 miles around a part of the city of Pontiac, Mich., and that it deny the application of the Pere Marquette for a certificate for a belt line around Pontiac and the extension from Wixom to Pontiac and a belt line around the city. "The two proposed routes," the report says, "cross, recross, encroach upon and conflict with each other to such an extent that construction of both lines, as now located, would be practically impossible. Either of the proposed belt lines would provide further industrial sites at Pontiac and serve for some interplant movement, but the Grand Trunk Belt is also needed to facilitate the operation of its system lines that now converge at Pontiac, to divert their traffic from the center of the city and to enable the Grand Trunk to cut the air line at Saginaw street. The Pere Marquette project, which would cost four times as much, would give Pontiac competitive service, but would have no other substantial advantage. While railroad competition might be desirable for a city of the importance of Pontiac, it is notable that Pontiac's rapid industrial expansion has taken place while it was served by a single railway system. So far as the rival railway systems are concerned, the Grand Trunk lines appear to have a greater need for the traffic, and their routes for hauling it would probably be more economical."

THE ATCHISON, TOPEKA & SANTA FE will establish a new train, the Second California Limited, between Chicago and Los Angeles on March 4. It will leave Chicago at 9:15 p. m. and will arrive in Los Angeles at 3:15 p. m. the third day. Returning it will leave Los Angeles at 1 p. m. and will arrive in Chicago at 11 a. m. the third day. On March 4 the schedule of the First California Limited will be changed, the train leaving Chicago at 8:00 p. m. instead of 8:15 p. m. and will arrive in Los Angeles at 2:00 p. m. instead of 2:30 p. m. Returning it will leave Los Angeles at 11:00 a. m. instead of 12:01 p. m. and arrive in Chicago at 9:00 a. m. instead of 10:00 a. m.

Financial

ALABAMA GREAT SOUTHERN.—Bonds Authorized.—The Interstate Commerce Commission has authorized this company to issue \$5,206,000 first consolidated 4 per cent bonds to be sold to J. P. Morgan & Co., at 97 and interest, giving an average annual cost to the carrier of approximately 4.62 per cent. The proceeds will be used to pay off a promissory note of \$5,200,000 issued to evidence a temporary loan used to aid in payment of first mortgage bonds which matured on December 1, 1927. The public offering of the new bonds was reported in the *Railway Age* of February 4.

CENTRAL VERMONT.—Receivers' Certificates Sold.—Dillon, Read & Co. and White, Weld & Co. announced on February 20 that they had agreed to purchase all of an issue of \$5,000,000 4½ per cent receivers' certificates issued on or before January 16, 1929, "if and when funds are requested by the receivers." They also announced that all of the certificates contracted for by them had been sold privately.

CHICAGO & NORTH WESTERN.—Equipment Trusts Authorized.—The Interstate Commerce Commission has authorized an issue of \$2,745,000 equipment trust of 1927 certificates, series T, paying 4½ per cent interest, to be sold at Halsey, Stuart & Co., Inc., at 101.53, giving an average annual cost to the carrier of approximately 4.262 per cent. The company invited bids from 38 banking and bond houses and received 13 bids, representing 23 houses. The equipment includes 20 locomotives, 43 suburban passenger train cars and 500 box cars, having a total approximate cost of \$3,676,382.

CINCINNATI NORTHERN.—1927 Earnings.—A preliminary statement of earnings for 1927 shows net income after interest and other charges of \$732,105, equivalent after allowance for the per cent dividends on the preferred stock, to \$24.40 per share on the outstanding common stock. Net income in 1926 was \$982,578, or \$32.75 per share. Selected items from the income statement follow:

	CINCINNATI NORTHERN 1927	1926
Railway operating revenues	\$4,636,369	\$4,808,433
Railway operating expenses	3,153,644	3,114,683
NET REVENUE FROM RAILWAY OPERATIONS	1,482,725	1,693,751
Railway tax accruals	344,804	330,033
Equip't & joint facility rent, net Cr.	340,615	307,424
Total	685,907	637,633
NET RAILWAY OPERATING INCOME	796,818	1,056,117
Miscellaneous and non-operating income	46,247	35,498
GROSS INCOME	843,065	1,091,616
Deductions from gross income	110,960	109,038
NET INCOME	732,105	982,578

Dividends accrued	300,000	300,000
SURPLUS	432,105	682,578

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—1927 Earnings.—A preliminary statement of earnings for 1927 shows net income after interest and other charges of \$8,775,382, equivalent after the 5 per cent dividends on the preferred stock, to \$17.59 per share on the outstanding common stock. Net income in 1926 was \$11,395,283, or \$23.16 per share. Selected items from the income statement follow:

	CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS 1927	1926
Railway operating revenues	\$91,185,737	\$94,539,987
Railway operating expenses	70,322,699	70,058,665
NET REVENUE FROM RAILWAY OPERATIONS	20,863,038	24,481,322
Railway tax accruals	5,047,015	5,384,906
Equipment & jt. facility rents, net Cr.	1,197,494	539,470
Total	6,259,971	5,954,077
NET RAILWAY OPERATING INCOME	14,603,067	18,527,246
Miscellaneous and non-operating income	2,709,146	1,486,476
GROSS INCOME	17,312,213	20,013,722
Deductions from gross income	8,536,830	8,618,438
NET INCOME	8,775,382	11,395,283
Dividends accrued	4,144,649	3,791,934
Sinking & other reserve funds	49,569	47,421
Total	4,194,218	3,839,355
SURPLUS	4,581,165	7,555,929

CONSOLIDATED RAILROADS OF CUBA.—Provision for Dividends.—The board of directors of the Consolidated Railroads of Cuba have voted a permanent policy establishing a cash reserve, equivalent to the dividend charge for one year on its preferred 6 per cent cumulative stock. This reserve is not to be merged in the general funds of the treasury of the company. The reserve is to be available in whole or in part if preferred dividend requirements are not available out of income, but must be restored promptly so as to re-establish the reserve as a permanent fund.

Similar action was taken by the board of the Cuban Railroad Company in respect to a reserve for its preferred dividend requirements.

The board of the Consolidated Railroad of Cuba declared the regular quarterly dividend of \$1.50 on the preferred payable April 2 to stockholders of record March 10. Directors of the Cuba Railroad Company declared a common stock dividend of \$1.20 a share, payable March 28, to stock of record on that date.

FRUIT GROWERS EXPRESS COMPANY.—Equipment Trusts.—Alex. Brown & Sons, Baltimore, have announced an offering of \$1,875,000 4½ per cent equipment trust certificates of 1928, series H, at prices yielding from 4.15 to 4.25 per cent, depending upon maturity. The certificates are to be issued to provide not to exceed 63 per cent of the cost of 1,250 new 40-ft. steel underframe refrigerator cars to be built in the company's own shops at a cost of approximately \$3,000,000.

GULF, MOBILE & NORTHERN.—1927 Earnings.—A preliminary statement of earnings for 1927 shows net income after interest and other charges of \$1,054,194, equivalent to \$9.23 per share on the outstanding preferred stock or equivalent after allowance for 6 per cent dividends on the preferred stock, to \$3.35 per share on the outstanding common stock. Net income in 1926 was \$1,319,427, or \$11.55 per share on the preferred and \$5.77 per share on the common. The preferred stock is cumulative. The regular 6 per cent dividends on that issue are being paid and the unpaid accumulations now total 16½ per cent. Selected items from the income statement follow:

	GULF, MOBILE & NORTHERN 1927	1926*
Avg. mileage operated	734	612
RAILWAY OPERATING REVENUES	\$7,099,496	\$6,659,465
Maintenance of way	1,201,607	1,098,874
Maintenance of eqpt.	1,081,181	998,704
Transportation	2,154,216	1,850,898
TOTAL OPERATING EXPENSES	5,125,615	4,558,639
Operating ratio	72.20	68.45
NET REVENUE FROM OPERATIONS	1,973,881	2,100,827
Railway tax accruals	440,868	528,428
Railway operating income	1,530,769	1,570,421
Equipment rents, net Dr.	141,623	97,847
Joint facility rents, net Dr.	121,393	31,220
NET RAILWAY OPERATING INCOME	1,267,753	1,441,353
Non-operat'g income	287,641	171,962
GROSS INCOME	2,555,394	1,613,314
Rent for leased roads	142,317	33,750
Interest on funded debt	344,167	220,000
TOTAL DEDUCT'S FROM GROSS INCOME	501,200	263,187
NET INCOME	1,054,194	1,350,127

* For comparative purposes operations of Birmingham & Northwestern included beginning May 1, 1926; Jackson & Eastern included beginning August 15, 1926.

INTERNATIONAL & GREAT NORTHERN.—Six Months Guaranty.—The Interstate Commerce Commission has issued a certificate to the Treasury that its financial ascertainment of the amount necessary to make good the six months guaranty to the receiver for the six months following the period of federal control shows that there is due the government \$102,926 on account of overpayments. The amount of the guaranty was fixed at \$1,881,085 and advance and partial payments were made amounting to \$1,815,000 and \$788,010 respectively, of which \$618,998 had been repaid.

LACKAWANNA & WYOMING VALLEY.—Financing.—Financing in the amount of \$4,000,000 is being arranged by this company with a banking group composed of Taylor, Ewart & Co., Inc., Bioren & Co., and Samuel McCroery & Co. This sum is to be obtained through the sale of \$2,900,000 first mortgage bonds and of \$1,100,000 gold debentures, public offering of which is expected to be made shortly. The Lackawanna & Wyoming Valley operates by a third-rail electric system a double-track railroad of modern construction between Scranton, Pittston and Wilkes-Barre, Pa.

MICHIGAN CENTRAL.—1927 Earnings.

A preliminary statement of earnings for 1927 shows net income after interest and other charges of \$16,866,558, equivalent to \$90.02 per share on the outstanding capital stock. Net income in 1926 was \$18,963,899, or \$101.21 per share. Selected items from the income statement follow:

	MICHIGAN CENTRAL 1927	1926
Railway operating revenues	\$89,750,602	\$95,524,343
Railway operating expenses	62,244,288	64,957,364
NET REVENUE FROM railway operations	27,506,314	30,566,980
Railway tax accruals	6,247,715	5,979,585
Equip't & joint facility rents, net Cr.	244,104	997,517
Total	6,517,488	7,001,849
NET RAILWAY OPERATING INCOME	20,988,826	23,565,130
Miscellaneous and non-operating income	2,035,430	1,763,385
GROSS INCOME	23,024,256	25,328,516
Deductions from gross income	6,157,698	6,364,617
NET INCOME	16,866,558	18,963,899
Dividends accrued	7,494,560	6,557,740
SURPLUS	9,371,998	12,406,159

NASHVILLE, CHATTANOOGA & ST. LOUIS.

—Bond Offering.—J. P. Morgan & Co. announced an offering on February 20 of \$16,800,000 first mortgage bonds, series A, maturing February 1, 1978 at 97 and interest, to yield 4.14 to maturity. The proceeds of the issue will be applied to provide or reimburse the company for the payment of the company's first consolidated 5 per cent mortgage bonds due April 1, 1928, of which \$16,060,000 are outstanding in the hands of the public and \$1,040,000 are held in the treasury of the company.

Interstate Commerce Commission approval of this issue was reported in the *Railway Age* of February 4.

NEW YORK CENTRAL.—1927 Earnings.

A preliminary statement of earnings for 1927 shows net income, after interest and other charges, of \$58,565,145, equivalent to \$15.28 per share on the outstanding capital stock. Net income in 1926 was \$55,664,041, or \$14.52 per share. The following selected items from the income statement include the figures for the Boston & Albany and the Ohio Central lines:

	NEW YORK CENTRAL 1927	1926
Railway operating revenues	\$383,377,311	\$399,537,749
Railway operating expenses	293,399,836	298,931,038
NET REVENUE FROM RAILWAY OPERATIONS	89,977,475	100,606,711
Railway tax accruals	25,193,780	26,881,808
Uncollectible railway revenues	106,117	167,080
Equipment and joint facility rents	2,853,751	1,399,331
Total	28,153,648	28,448,219
NET RAILWAY OPERATING INCOME	61,823,827	72,158,492
Miscellaneous and non-operating income	42,653,724	29,098,966
Gross Income	104,477,551	101,257,458
Deductions from gross income	45,912,406	45,593,417
NET INCOME	58,565,145	55,664,041

Dividends accrued	30,462,783	26,827,815
Investment in physical property	650	.....
Sinking and other reserve funds	159,054	145,179
Total	30,622,487	26,972,994
SURPLUS	27,942,658	28,691,047

NEW YORK, CHICAGO & ST. LOUIS.—

Offering of Stock.—Common stockholders of record March 12 will be given the right to subscribe for 33,785 shares of treasury common stock at par and 33,785 shares of 6 per cent cumulative preferred stock, series A, at \$106 per share on the basis of one new share of common and one share of preferred for each share of common stock owned.

Stock Application.—This company has applied to the Interstate Commerce Commission for authority to issue 33,785 shares of 6 per cent cumulative preferred stock at \$106 and to sell a like amount of common stock at par to the holders of outstanding common stock, the proceeds to be used to reimburse the treasury for capital expenditures.

NEW YORK, NEW HAVEN & HARTFORD.—

Notes Offered.—Public offering of \$17,000,000 5 per cent collateral note participation certificates by Halsey, Stuart & Co., Edward Lowber Stokes & Co., and Hambleton & Co. It was announced that only a part of the total is being offered to the public, the greater part having been sold privately. The certificates mature March 1, 1930 and are offered at 100¼ and interest, to yield 4.23 per cent to the only callable date, March 1, 1929 with a 5 per cent yield thereafter.

Proceeds of the note will be applied to the redemption on March 1, of this year, of a 6 per cent collateral note of an equal principal amount, resulting in no increase in the company's funded debt and effecting a reduction in the total annual fixed charges thereon.

The security for the note consists of \$20,000,000 first and refunding mortgage 6 per cent bonds, series A, due October 1, 1930. These bonds are secured by a first lien on 438.46 miles of road.

NEW YORK, ONTARIO & WESTERN.—1927

Earnings.—A preliminary statement of earnings for 1927 shows net income after interest and other charges of \$5,631, equivalent to one cent per share on the outstanding common stock. Net income in 1926 was \$775,128, or \$1.33 per share. Selected items from the income statement follow:

	NEW YORK, ONTARIO & WESTERN 1927	1926
Avg. mileage operated	569	569
RAILWAY OPERATING REVENUES	\$13,157,620	\$13,974,119
Maintenance of way	1,971,657	1,908,831
Maintenance of eqpt.	2,610,149	2,726,659
Transportation	5,695,969	5,704,997
TOTAL OPERATING EXPENSES	10,972,046	10,974,004
Operating ratio	83.39	78.53
NET REVENUE FROM OPERATIONS	2,185,574	3,000,115
Railway tax accruals	455,856	570,416
Railway operating income	1,726,945	2,427,038
Equipment rents, net Dr.	567,905	509,304

Joint facility rents, net Dr.	92,903	109,604
NET RAILWAY OPERATING INCOME	1,066,137	1,808,130
Non-operat'g income	353,595	379,045
GROSS INCOME	1,419,732	2,187,176
Rent for leased roads	220,844	211,000
Interest on funded debt	1,156,925	1,159,625
TOTAL DEDUCT'S FROM GROSS INCOME	1,414,101	1,412,047
NET INCOME	5,631	775,128

NORTHWESTERN PACIFIC.—Bonds Au-

thorized.—The Interstate Commerce Commission has authorized an issue of \$924,000 first refunding 4½ per cent mortgage bonds to be sold through competitive bidding at not less than 95.2381, that being the price the Southern Pacific and Atchison, Topeka & Santa Fe have agreed to bid for them. The proceeds are to be applied to the redemption of \$880,000 California Northwestern 30-year first mortgage sinking fund bonds, maturing April 1, 1928.

PENNSYLVANIA.—1927 Earnings.

A preliminary statement of earnings for 1927 shows net income after interest and other charges of \$68,160,296, equivalent to \$6.82 per share on the outstanding \$50 par value common stock. Net income in 1926 was \$67,567,959, or \$6.76 per share. Selected items from the income statement follow:

	PENNSYLVANIA RAILROAD 1927	1926
ated	10,500	10,527
Average Mileage Oper-		
RAILWAY OPERATING REVENUES	\$664,851,023	\$709,817,450
Maintenance of way	87,929,524	92,362,198
Maintenance of eqpt.	140,878,861	161,880,739
Transportation	245,052,205	259,815,202
TOTAL OPERATING EXPENSES	510,668,662	550,360,578
Operating ratio	76.8	77.6
NET REVENUE FROM OPERATIONS	154,182,361	159,456,872
Railway tax accruals	35,709,749	37,110,193
Railway operating income	118,323,001	122,085,068
Equipment rents, net Dr.	12,923,190	14,921,271
Joint facility rents, net Dr.	1,422,508	731,039
NET RAILWAY OPERATING INCOME	103,977,303	106,432,758
Non-operating income	43,236,996	39,890,036
GROSS INCOME	147,214,300	146,322,793
Rent for leased roads	47,029,935	45,927,919
Interest on funded debt	29,893,588	30,013,723
TOTAL DEDUCT'NS FROM GROSS INCOME	79,054,004	78,754,835
NET INCOME	68,160,296	67,567,959
Sinking Fund and other appropriations	5,164,439	4,108,483
Dividends	34,949,500	32,451,339
SURPLUS	28,046,357	30,270,966
Net Income, per cent of capital stock	13.65	13.53

PITTSBURGH & LAKE ERIE.—1927 Earn-

ings.—A preliminary statement of earnings for 1927 shows net income after interest and other charges of \$6,611,809, equivalent after allowance for the per cent dividends on the preferred stock, to \$9.18 per share on the outstanding \$50 par value common stock. Net income in 1926 was \$7,838,642, or \$10.89 per share. Selected items from the income statement follow:

PITTSBURGH & LAKE ERIE		
	1927	1926
Railway operating revenues	\$31,785,820	\$34,205,976
Railway operating expenses	26,320,312	27,546,039
NET REVENUE FROM RAILWAY OPERATIONS	5,465,508	6,659,937
Railway tax accruals	2,004,955	2,152,571
Equip't & joint facility rents, net Cr. ..	4,545,146	4,642,809
Total, net Cr.	2,539,787	2,486,867
NET RAILWAY OPERATING INCOME	8,005,294	9,146,804
Miscellaneous and non-operating income	1,158,867	1,422,285
GROSS INCOME	9,164,162	10,569,089
Deductions from gross income	2,552,353	2,730,447
NET INCOME	6,611,809	7,838,642
Dividends accrued	3,958,255	7,197,120
SURPLUS	2,653,554	641,522

RUTLAND—1927 Earnings—A preliminary statement of earnings for 1927 shows net income after interest and other charges of \$63,344, equivalent to 69 cents per share of the outstanding 7 per cent preferred stock. Net income in 1926 was \$565,575, or \$6.31 per share of preferred stock. Selected items from the income statement follow:

RUTLAND		
	1927	1926
Railway operating revenues	\$6,197,106	\$6,759,524
Railway operating expenses	5,556,639	5,529,382
NET REVENUE FROM RAILWAY OPERATION	640,467	1,230,142
Railway tax accruals	260,570	356,912
Equip't & joint facility rents, net Dr.	55,258	97,412
Total	205,366	259,646
NET RAILWAY OPERATING INCOME	435,101	970,496
Miscellaneous and non-operating income	105,566	76,478
GROSS INCOME	\$40,667	1,046,974
Deductions from gross income	477,323	481,399
NET INCOME	63,344	565,575
Dividends accrued		89,613
SURPLUS	63,344	475,962

SOUTHERN PACIFIC—Control of Texas Midland Approved—The Interstate Commerce Commission has authorized the Southern Pacific to purchase from the Green estate the capital stock and other securities of the Texas Midland and has authorized the Texas & New Orleans, which operates the Southern Pacific Lines in Texas and Louisiana, to acquire the property by lease. The Texas Midland operates a line from Ennis, Ellis County, Tex., to Paris, Lamar County, 125.2 miles.

TEXAS & PACIFIC—Equipment Trust Certificates—The Interstate Commerce Commission has approved an issue of \$2,805,000 4½ per cent equipment trust certificates, series A, to be sold to the Guaranty Company of New York and Spencer Trask & Co., at 100.9512, giving an average annual cost to the carrier of 4.3516 per cent. The equipment includes 15 locomotives, 8 passenger train cars and 1010 freight train cars, having a total approximate cost of \$3,749,244. The public offering of these securities was

reported in the Railway Age of February 4.

TORONTO, HAMILTON & BUFFALO.—1927 Earnings—A preliminary statement of earnings for 1927 shows net income after interest and other charges of \$1,263,499 as compared with net income in 1926 of \$928,437.

WEST JERSEY & SEASHORE.—New Director—David Baird, Jr., of Camden, N. J. has been elected a director succeeding W. A. Patton, deceased.

WESTERN PACIFIC.—Acquisition—This company has applied to the Interstate Commerce Commission for authority to acquire control by purchase of stock of the Petaluma & Santa Rosa. There is already pending before the commission a joint application of the Southern Pacific and the Atchison, Topeka & Santa Fe to acquire control of the company by purchase of stock from E. H. Maggard, but the Western Pacific says that if it is allowed to acquire the line competition will be preserved in the territory served by the electric line, as it connects with the Northwestern Pacific, controlled jointly by the Southern Pacific and Santa Fe, and that it and the Northwestern Pacific are the only railroads serving the northwestern part of California and connecting with transcontinental lines to the East.

Valuation Reports

The Interstate Commerce Commission has issued final valuation reports, finding the value for rate-making purposes of the property owned and used for common-carrier purposes as of the respective valuation dates as follows:

New Orleans Great Northern ..	\$6,955,894	1916
Philadelphia, Bethlehem & New England	1,816,200	1917

Dividends Declared

Alabama & Vicksburg.—Capital stock, 3 per cent, semi-annually, payable April 1 to holders of record March 8.
Boston & Albany.—2 per cent, quarterly, payable March 31 to holders of record February 29.
Canadian Pacific.—Common, 2½ per cent, quarterly; preference, 2 per cent, both payable March 31 to holders of record March 1.
Chestnut Hill Railroad.—\$.75, quarterly, payable March 5 to holders of record February 21.
Consolidated Railroads of Cuba.—Preferred, 1½ per cent, quarterly, payable April 2 to holders of record March 10.
Cuba Railroad.—Common, \$1.20, payable March 28 to holders of record March 28.
Delaware & Bound Brook.—2 per cent, quarterly, payable February 20 to holders of record February 15.
Gulf, Mobile & Northern.—6 per cent cumulative preferred, \$1.50, quarterly, payable April 2 to holders of record March 15.
North Pennsylvania.—\$1.00, quarterly, payable February 25 to holders of record February 20.
Philadelphia, Germantown & Norristown.—\$1.50, quarterly, payable March 5 to holders of record February 21.
St. Joseph, South Bend & Southern.—Common, ¾ per cent; preferred 2½ per cent, both payable March 15 to holders of record March 11.
St. Louis Southwestern.—Preferred, \$1.25, quarterly, payable March 31 to holders of record March 12.
Vicksburg, Shreveport & Pacific.—Preferred, 2½ per cent, semi-annually; common, 2½ per cent, semi-annually, both payable April 1 to holders of record March 8.

Average Price of Stocks and of Bonds

	Feb. 21	Last week	Last year
Average price of 20 representative railway stocks ..	115.70	116.63	107.75
Average price of 20 representative railway bonds ..	96.82	97.10	92.97

Officers

Executive

At the annual meeting of the board of directors of the Texas Pacific-Missouri Pacific Terminal Railroad of New Orleans, held recently, the following officers were elected: **William H. Williams**, chairman of the board of directors, **L. Warrington Baldwin**, president, **J. L. Lancaster**, vice-president, **C. W. Veitch**, vice-president, assistant secretary and assistant treasurer, **L. F. Mellersten**, assistant secretary, **Carl A. deGersdorff**, general counsel, and **Thomas J. Freeman**, general solicitor.

H. F. Smith, vice-president and traffic manager of the Nashville, Chattanooga & St. Louis, has been elected senior vice-president, a newly created position. Mr. Smith will assume his new position on March 1, with headquarters as before at Nashville, Tenn. **Charles Barham**, chairman of the Southern Freight Association, with headquarters at Atlanta, Ga., has been elected vice-president and traffic manager, succeeding Mr. Smith. At the time of his resignation in 1922, Mr. Barham was general freight agent of the N. C. & St. L.

The following officers were elected by the board of directors of the Chicago, Milwaukee, St. Paul & Pacific at a meeting held in New York on February 14: **H. A. Scandrett** President, Chicago. **H. E. Byram** Chairman of board, Chicago. **W. W. K. Sparrow** Vice-pres., finance and acct., Chicago. **J. T. Gillick** Vice-pres., operation, Chicago. **H. E. Pierpont** Vice-pres., traffic, Chicago. **R. J. Marony** Vice-pres., charge of New York office. **H. B. Earling** Vice-pres., Seattle, Wash. **T. W. Burtness** Sec., Milwaukee, Wis. **J. Welch** Asst. sec., New York. **A. C. Hagensick** Asst. sec., Milwaukee. **John Dickie** Treas., Chicago. **R. P. Rockefeller** Asst. treas., Chicago. **L. G. Weiffenbach** Asst. treas., New York. **Walter V. Wilson** Comptroller, Chicago. **C. F. Loweth** Chief engr., Chicago. **H. H. Field** Gen. coun., Chicago. **O. W. Dynes** Gen. solr., Chicago.

Financial, Legal and Accounting

L. B. Unwin, assistant auditor of miscellaneous accounts of the Canadian Pacific, has been appointed assistant comptroller, with headquarters at Montreal, Que. **E. A. Leslie**, chief accountant in the joint facility bureau, has also been appointed assistant comptroller, with headquarters at Montreal.

Ernest E. Lloyd, who has been appointed comptroller of the Canadian Pacific, with headquarters at Montreal,

Que., was born at Grimsby, England, on September 2, 1868. He came to Canada and settled in Manitoba in July, 1876, and after attending the public schools and studying law for one and a half years, he entered the service of the Canadian Pacific on December 27, 1887, in the stores department at Winnipeg. On December 17, 1897, he became chief clerk in the stores department at Van-



Ernest E. Lloyd

couver, B. C., and the following February was transferred in the same capacity to Montreal, Que. When the stores accounting separated from the stores department on January 1, 1905, Mr. Lloyd went with the auditor of stores as chief clerk. On January 15, 1910, he became assistant auditor of stores and mechanical accounts, and on August 1, 1913, was appointed auditor of the department. Mr. Lloyd was appointed auditor of disbursements on March 18, 1918, and was appointed assistant comptroller on February 1, 1921, which position he was holding at the time of his recent appointment as comptroller.

Operating

C. G. Grigg has been appointed trainmaster of the Richmond district of the Atlantic Coast Line, with headquarters at Richmond, Va., succeeding **H. E. Bruffey**, deceased. The position of trainmaster of the Norfolk district, with headquarters at Tarboro, N. C., has been abolished.

B. L. Pedneau, trainmaster on the Virginian, with headquarters at Princeton, W. Va., has been appointed superintendent of the New River division, with the same headquarters, succeeding **George Masten**, promoted. **I. H. Fry**, assistant trainmaster, with headquarters at Elmore, W. Va., has been appointed trainmaster at Princeton, succeeding Mr. Pedneau, and **C. E. Steorts** has been appointed assistant trainmaster at Elmore, succeeding Mr. Fry.

F. H. Christian, trainmaster on the Beaumont division of the Gulf, Colorado & Santa Fe, has been appointed acting superintendent of the Southern division, with headquarters at Temple, Tex., succeeding **K. S. Hull**, deceased. **J. P. Cowley**, assistant to the general man-

ager, with headquarters at Galveston, Tex., has been appointed acting superintendent of the Galveston division, with headquarters at Galveston, succeeding **A. P. Hall**, who has been granted a leave of absence. **D. J. Sweeney**, chief clerk to the vice-president and general manager, has been appointed acting assistant to the general manager, replacing Mr. Cowley.

E. C. Bagwell, general superintendent of the Seaboard Air Line, with headquarters at Savannah, Ga., has been appointed operating assistant to the vice-president, a newly created position, with the same headquarters. The following officers will report to him: general superintendent of transportation, superintendent of telegraph, general superintendents, superintendent of stations and transfers, general supervisor of yards and terminals, safety supervisor, supervisor of passenger operations and supervisor of rules. The Western general district has been abolished. The East Carolina and Georgia divisions have been assigned to the Northern district, and the Alabama division has been assigned to the Southern district. The South Carolina division has been transferred to the jurisdiction of the Southern district.

John H. Valentine, who has been promoted to superintendent of the Superior division of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Green Bay, Wis., was born on October 3, 1888, at Cross Plains, Wis. He completed high school at Green Bay in 1904 and in the same year entered railway service on the Milwaukee as a telegraph operator. For the next five years he served at various points on the La Crosse and the Racine and Southwestern divisions as an operator and agent and on July 1, 1909, he became a telegraph operator in the dispatcher's office of the Chicago and Milwaukee division at Chicago. In the same year he was advanced to train dispatcher at Chicago, becoming night dispatcher on February 1, 1918, and chief dispatcher on the Madison division at Madison, Wis., on October 1, 1918. On December 1, 1921, Mr. Valentine was transferred to the Illinois division, with headquarters at Savanna, Ill., where he remained until February 1, 1925, when he was promoted to trainmaster of the Kansas City division, with headquarters at Ottumwa, Iowa. He was further promoted to assistant superintendent of the Chicago terminals on June 15, 1926, his promotion to superintendent of the Superior division becoming effective on January 1.

F. E. Devlin, superintendent of the Superior division of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Green Bay, Wis., has been transferred to the Coast division, with headquarters at Tacoma, Wash. **J. H. Valentine**, assistant superintendent of the Chicago Terminal division with headquarters at Bensenville, Ill., has been promoted to superintendent of the Superior division, succeeding Mr. Devlin.

Mr. Valentine has been replaced at Bensenville by **L. F. Donald**, who was assistant superintendent of the Terre Haute division, with headquarters at Terre Haute, Ind. **W. G. Bowen**, trainmaster on the Sioux City and Dakota division, has been appointed assistant superintendent of the Terre Haute division, succeeding Mr. Donald. **G. H. Hill**, trainmaster on the Idaho division, with headquarters at St. Maries, Idaho, has been promoted to superintendent of the Bellingham division, with headquarters at Bellingham, Wash., succeeding **H. G. Selby** who has been assigned to other duties. **A. F. Manley**, roadmaster at Mobridge, S. D., has been appointed trainmaster at St. Maries, succeeding Mr. Hill. **R. F. Doud**, chief dispatcher on the Musselshell division at Miles City, Mont., has been promoted to trainmaster on the Sioux City and Dakota division succeeding Mr. Bowen.

Frederick W. Curtis, superintendent of the Twin City Terminal division of the Minneapolis, St. Paul & Sault Ste Marie, with headquarters at Minneapolis, Minn., has been appointed assistant to the general superintendent of transportation, with headquarters at the same point. **Clinton B. Wilson**, trainmaster of the Gladstone division, with headquarters at Gladstone, Mich., has been promoted to superintendent of the Twin City Terminal division succeeding Mr. Curtis. **Walter H. Mann**, trainmaster of the First district of the Fond du Lac Division, with headquarters at Fond du Lac, Wis., has been promoted to superintendent of the Winnipeg division, with headquarters at Thief River Falls, Minn. **Herbert D. Keene** has been appointed assistant superintendent of the Twin City Terminal division, with headquarters at Minneapolis. **George H. Nolan** has been appointed assistant superintendent of the Stevens Point division, with headquarters at Ironwood, Mich. **William D. Boyce**, trainmaster of the Stevens Point division, with headquarters at Stevens Point, Wis., has been transferred to the First district of the Fond du Lac division, replacing Mr. Mann. Mr. Boyce will in turn be succeeded by **Edwin D. Jones**, trainmaster of the Second district of the Fond du Lac division, with headquarters at Fond du Lac. **Edwin E. Nelbecker** has been appointed trainmaster to succeed Mr. Jones. **James R. Branley**, trainmaster of the Duluth-Superior division, with headquarters at Superior, Wis., has been transferred to the Gladstone division to replace Mr. Wilson. **Harold A. Sparks**, assistant trainmaster on the Duluth-Superior division, with headquarters at Crosby, Minn., has been promoted to trainmaster, replacing Mr. Bradley. Mr. Sparks has been succeeded as assistant trainmaster at Crosby by **Ralph O. Jensen**.

Mechanical

E. H. Roy, general master mechanic of the Seaboard Air Line, with headquarters at Savannah, Ga., has been appointed master mechanic of the Alabama division and that portion of the South

Carolina division between Cayce, S. C., and Jacksonville-Baldwin, Fla., excluding Jackson and Baldwin, with the same headquarters, succeeding **H. Mc Lendon**, transferred.

W. J. Johnston, traveling engineer on the Iowa & Dakota division of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Mason City, Iowa, has been appointed acting master mechanic of that division, with headquarters at the same point.

James R. Hayden, who has been promoted to superintendent of the car department of the Missouri-Kansas-Texas, with headquarters at Denison, Tex., has been connected with the car department of the Katy ever since his first entry into railroad service on June 13, 1916. He was born on May 22, 1889, at St. Paul, Mo., and entered St. Mary's College, St. Mary, Kan., at the age of 15, graduating from a liberal arts course there in 1911. In 1912 Mr. Hayden entered the service of the American Car and Foundry Company at St. Charles, Mo., and, until 1916, when he became a car draftsman on the Katy, he worked in both the shop and the drafting room. During his service with the Katy he had charge of all shop



James R. Hayden

work in connection with a three-year car rebuilding program. On January 1, 1926, Mr. Hayden was promoted to assistant superintendent of the car department, with headquarters at Denison, a position he held until his further promotion to superintendent of the car department.

Engineering, Maintenance of Way and Signaling

A. B. Himes, assistant engineer maintenance of way and structures of the Eastern lines of the Baltimore & Ohio, with headquarters at Baltimore, Md., has been appointed first assistant signal engineer, with the same headquarters.

F. H. Hibbard, who has been appointed engineer of the Quebec Central, with headquarters at Sherbrooke, Que., taking over the duties of the chief engineer and the superintendent of buildings and bridges, has had extensive and varied

experience on railway work, particularly with the construction of the National Transcontinental (now part of the Canadian National) and the St. John Valley Railway. In June 1913, Mr. Hibbard became connected with the Quebec Central as engineer in charge of construction and three years later was appointed



F. H. Hibbard

assistant engineer. On January 1, 1924, he was appointed engineer maintenance of way, which position he was holding at the time of his recent appointment as engineer.

Purchases and Stores

C. A. Marshall, stores inspector of the Wabash, with headquarters at St. Louis, Mo., has been appointed division storekeeper of the Central of New Jersey, with headquarters at Elizabethport, N. J.

Ernest S. Newton, who has been promoted to purchasing agent and storekeeper of the Gulf, Colorado & Santa Fe, with headquarters at Cleburne, Tex., entered railway service in November, 1889, with that railroad as a clerk in the freight office at Galveston, Tex. In February, 1890, he was appointed division storekeeper and in 1900 he was appointed chief clerk to the purchasing agent and general storekeeper, with headquarters at Cleburne. Mr. Newton was appointed storekeeper at Cleburne in 1906, a position he held for the next 22 years until his promotion to purchasing agent and storekeeper in January, 1928.

Obituary

Fred P. Pelter, vice-president and general manager of the Norfolk Southern, with headquarters at Norfolk, Va., died at his home in that city on February 18.

C. E. E. Ussher, general passenger traffic manager of the Canadian Pacific, with headquarters at Montreal, Que., died in that city on February 22.

Alpheus G. Fell, superintendent of the Salt Lake division of the Southern Pacific, with headquarters at Ogden, Utah, from 1879 to 1888, died in that city on December 28. Mr. Fell had served as a

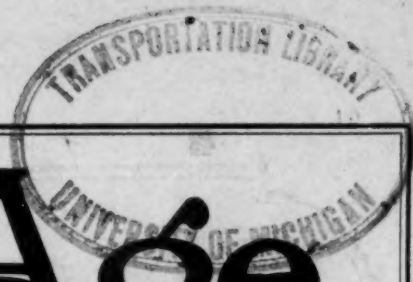
telegraph operator on the Grand Trunk (now the Grand Trunk Western), as a freight agent and train dispatcher on the Union Pacific and as chief dispatcher on the Central Pacific (now part of the Southern Pacific). He participated in the ceremonies incident to the driving of the last spike on the Central Pacific at Promontory, Utah, in May, 1869. Mr. Fell was a former mayor of Ogden, Utah.

Charles G. Martin, assistant to the general manager of the Eastern lines of the Baltimore & Ohio, with headquarters at Baltimore, Md., died of pneumonia at his home in Relay, Md., on February 19.

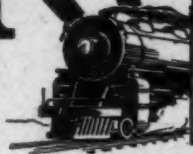
James Gorman, superintendent of sleeping, dining and parlor cars and railway restaurants of the Western region of the Canadian National, with headquarters at Winnipeg, Man., died in that city on February 19 from injuries received when he fell on a concrete floor.

Charles Marshall, retired superintendent of the New Orleans and Mobile division of the Louisville & Nashville, died at his home at Bay St. Louis, Miss., on January 14, after an illness of several weeks. Mr. Marshall, who was born at Franklin, Tenn., on November 9, 1848, began his railroad service as an agent on the Nashville & Decatur (now a part of the Louisville & Nashville) in 1866. Until his retirement on August 1, 1917, he had been continuously in the service of the L. & N. for 51 years. Mr. Marshall had served as agent at Pulaski, Tenn., Clarksville, McKenzie and New Orleans, La., as train dispatcher at Memphis, Tenn., and as general agent in the traffic department at New Orleans. He was promoted to superintendent of the New Orleans and Mobile division, with headquarters at New Orleans, on September 1, 1886. He had served nearly 31 years in that position.

William Alanson Barnard, superintendent of the Winnipeg division of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Thief River Falls, Minn., died at Minot, N. D., on February 5 following an operation for appendicitis. Mr. Barnard was born on October 17, 1869, at Fayette, Iowa, and entered railway service at the age of 18 years as a brakeman on the Chicago, Milwaukee, St. Paul & Pacific. Later he served that railroad as telegraph operator and fireman, then becoming an agent on the Soo line. From 1891 to 1894 Mr. Barnard was advanced successively through the positions of agent, operator and cashier, clerk in the auditor's office and manager in the office of the superintendent of telegraph, after that time being promoted to train dispatcher at Minneapolis, Minn. In 1899 he was advanced to chief dispatcher at Enderlin, S. D., and following a short period of service in that capacity at Minneapolis he was promoted to trainmaster at Gladstone, Mich., in 1906. Mr. Barnard was promoted to superintendent of the Winnipeg division on September 1, 1912.



Railway Age



Motor Transport Section

*Devoted to the
Co-ordination of Railway and Highway Service*



FIRST HALF OF 1928—No. 8

NEW YORK—FEBRUARY 25, 1928—CHICAGO

SEVENTY-THIRD YEAR

Motor Transport Meeting and Exhibit

ATLANTIC CITY has been selected as the meeting place for the next meeting of the Motor Transport Division of the American Railway Association, primarily to enable railway delegates to derive benefit from the exhibit by manufacturers of motor coaches and trucks.

The first two days of the meeting, June 21 and 22, will be devoted to executive sessions to which the railway delegates only will be admitted. On the third day, June 23, automotive manufacturers and the interested public generally will be invited.

A large attendance of railway men interested in the co-ordination of railway and highway transportation and a large exhibit by manufacturers of motor coaches and trucks will make this meeting, the first since the organization of the Motor Transport Division as a part of the American Railway Association, of utmost value to railway men and manufacturers alike.





There is something more than Safety
in the Westinghouse Automotive Air Brake

COMBATING the ever present evil of "brake riding," the Westinghouse Automotive Air Brake has come to be recognized, not alone for its positive, safe, quick action—but as a potent economic necessity.



We feel safe in saying that more than half the expense of brake lining is wasted through nervous anticipation on the part of the driver, which is known as "brake riding"—the direct unconscious result of lack of confidence in ordinary brakes.

With the Westinghouse Automotive Air Brake, responsive to the slightest touch, unnecessary braking is minimized if not entirely eliminated, drivers are in turn relieved from undue mental and physical strain . . . and, as a consequence, an entire service is bettered.

Cut your braking expense . . . insure safety . . . get fuller information on the many advantages of the Westinghouse Automotive Air Brake from any of our conveniently located offices. This service is maintained for the exclusive use of the truck operator and is in no way obligatory.

WESTINGHOUSE AIR BRAKE COMPANY

Automotive Brake Division

WILMERDING - - PENNSYLVANIA

6211

WESTINGHOUSE
AUTOMOTIVE AIR BRAKES



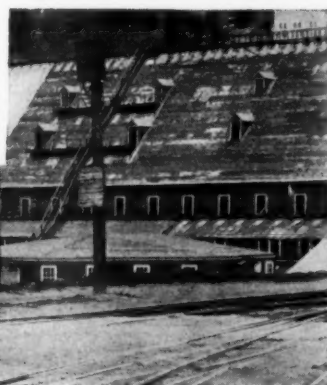
Railway Age

Motor Transport Section
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Coordination of Railway and Highway Service

Vol. 84

February 25, 1928

No. 8



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Motor Transport Section

Devoted to the
Co-ordination of Railway and Highway Service

Vol. 84, No. 8

February 25, 1928

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Another Year of Progress

THE year 1927 was another period of progress all along the line in the utilization of the advantages of motor coach and motor truck operation by the railways. The alarm once felt by the railways at the spread of motor transportation is giving way to a recognition of the fact that it is an agency which they can themselves use to advantage. During 1927, the number of railways utilizing motor vehicles steadily increased as did the number of motor vehicles operated by them. Experimental operations proved generally successful, providing a basis for future expansion with confidence. All the signs point to 1928 as a year which will see continued progress at an even more rapid pace.

The Term "Motor Coach" Favored

THE announcement of the standardization of the term "motor coach" in the columns of the *Railway Age*, made in the *Motor Transport Section* of December 24, appears to have met with general favor. Letters which have been received indicate that there is no disagreement with our conclusion that the term "motor bus" should be discarded and that the term "motor coach," which is more truly descriptive of the modern highway passenger vehicle of large capacity, should be generally used. Two of the letters received commenting on the standardization of the term "motor coach" were published in the Communications column in the January 28 issue of the *Motor Transport Section*. The letter from the travel manager of the Literary Digest is particularly interesting and significant. It represents the conclusions of a publication recognized as one of the foremost authorities on terminology. We shall be glad to receive other comments on this matter.

Specialists or All-Round Mechanics?

IN hiring mechanics to maintain motor coaches and motor trucks, the first question which arises is whether specialists on individual kinds of maintenance work or mechanics of general experience in all kinds of maintenance work should be selected. Among the railway motor coach companies the rule in general seems to be to hire mechanics with a knowledge of all phases of motor coach maintenance. This is probably due to the fact that only a few railways are operating motor coaches on a large scale as yet, so that the amount of maintenance to be done on their equipment is insufficient to require the employment of more than a few mechanics. It is obvious that when only a few mechanics are needed to do the work at hand, general experience is more to be desired than specialized knowledge of the maintenance of only one part. It is not-

able, however, that the larger the operation, the greater is the tendency toward the employment of specialists on various kinds of maintenance. The New England Transportation Company, which has the largest fleet of motor coaches operated by a railway, employs specialists on rear end, transmission, engine and electrical maintenance. Most of its men are mechanics of general experience but emphasis is laid on hiring specialists, particularly for the engine and electrical maintenance. The Northland Transportation Company, the second largest operator, requires general experience of all of its mechanics, but prefers specialists on the maintenance of motors in its motor unit rebuilding department. The Southern Pacific Motor Transport Company makes the point that its mechanics must have a special knowledge of the type of motor coach they will be required to handle. The advantages of this are readily apparent.

Motor Transport Division Begins Work

THE first meeting of the Motor Transport Division of the American Railway Association, which was held at Chicago last month, was a success. Not only was the attendance large and representative of all parts of the country, as well as of practically every department of the railroads, but even more important, there was a noticeable enthusiasm for the future work of the division among those attending the meeting. All of these are good signs. The Motor Transport Division has a highly important job of work to do. Enthusiasm among the membership of the division, representation of all the railways, and representation of most if not all of the departments of railroading, are essential if the division is to be successful in carrying on the work ahead of it. It might have been better if the various committees of the division had been appointed during the first meeting, so that they might have had preliminary conferences before leaving Chicago, but there is still ample time in which to appoint them and to get them actively at work in order that they may prepare reports for presentation at the Atlantic City meeting of the division in June. There is, however, no time to waste if this is to be accomplished.

The Parker and Denison Bills

IN our January 28 issue were described the bills introduced in Congress by Congressmen Parker and Denison, which provide for the regulation of interstate common carrier motor vehicle operations. These bills differ in several respects, but principally in that the Parker bill provides for the regulation of both motor coaches and motor trucks operating as interstate common carriers, while the Denison bill provides only for the regulation of common carrier interstate motor

coaches. The Denison bill is based on a model bill proposed by the Bus division of the American Automobile Association, although very recent reports have it that the Bus division is now in disagreement over the Denison bill and is considering drawing up another one less comprehensive in its requirements. The Parker bill is drawn along the lines of the legislation proposed by the National Association of Railway and Utilities Commissioners. As between the two, the Parker bill appears to be the more desirable. There is no valid reason why common carrier motor trucks should not be regulated in the same fashion as common carrier motor coaches. The type of regulation outlined in the Parker bill is such as to help rather than hinder the development of motor vehicle transportation.

As Systematization Becomes Necessary

A SMALL motor coach operation can usually be conducted with a minimum of organization and system. This follows because the supervisory officer, if he is competent, sees all his employees frequently and can by word of mouth and personal example inculcate most of the principles which must be borne in mind, without the formality of laying down rules. As an operation grows, however, systematization must grow with it. It is quite as important for the operating head of a large organization to be informed currently of performance as it is for the supervisor of a smaller operation to be so informed. With the larger organization, however, the executive cannot supervise all details, hence systematization—setting up of standard rules and reports—become necessary. Such reports and rules are not easy to prepare. Unless wisdom enters into their preparation they may conceal information as well as impart it, and they entail some expense. Aside from the operating side of the business, moreover, the traffic department also has its problems—particularly on a railroad coach operation where all types of railroad tickets as well as coach tickets must be handled. The New England Transportation Company, the New Haven's pioneer coach operating subsidiary, has met the problems of keeping in smooth operation a large organization by carefully systemizing its work. Since it is the largest railroad coach operator in the country and one of the largest among all coach operators, its experience in this field should prove valuable to all growing motor coach organizations which have not yet attained its size. On another page of this issue appears the first of two articles describing in some detail the operating and traffic systems employed by this company.

Legislation—Good or Evil?

THE various interests concerned in the adoption of legislation to regulate motor transportation presented their arguments to the Interstate Commerce Commission on February 10. Now all may hope that the commission may soon be able to formulate its recommendations and transmit them to Congress. Motor transport, particularly as it affects the railroads, must remain an uncertain quantity until Congress enacts some regulatory legislation, and uncertainty is the greatest obstacle to progress.

One fact stands out emphatically from the argument at Washington: that is that the railroads are practically alone in the desire to secure regulation of motor truck

service. It is difficult to believe that any such regulation can be enacted when there is so little support for it. Alfred P. Thom, seeing the trend of opinion, very wisely suggested that truck regulation might be held in abeyance pending further study, while regulation of motor coach lines could be adopted at once. Meantime a campaign of education of the public in the railroad point of view on this question suggests itself.

Concerning regulation of motor coach operation, while most opinions favored some regulation, there are still indications of vast differences in the exact nature of the regulation desired. For instance, the Bus Division of the American Automobile Association proposes that all coach lines which have been in operation for a year at the time of passage of the legislation should automatically be granted certificates.

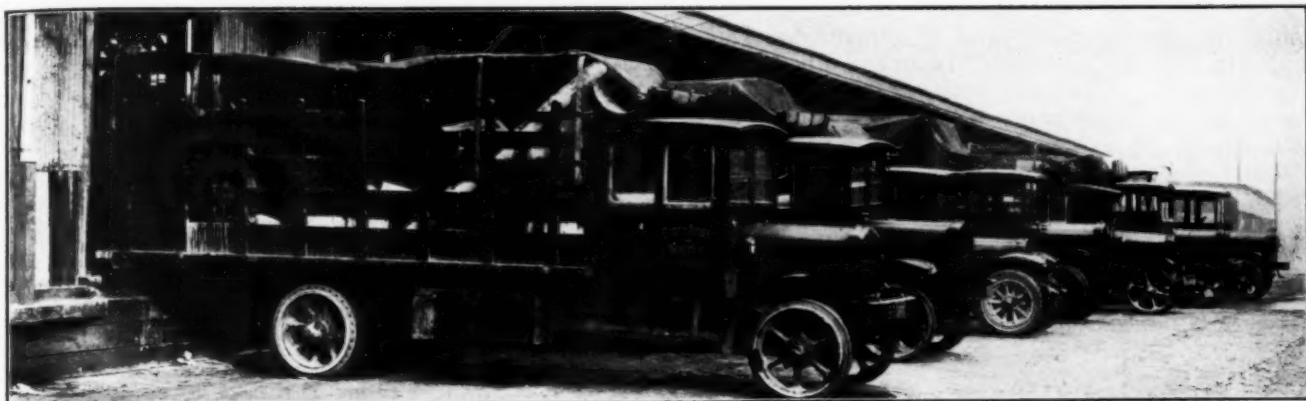
This proposal is preposterous. Interstate regulation, if it is to be effective, cannot be less strict than existing state regulation. There are many lines now engaged in interstate operation, having entered the field after the Buck-Kuykendall decision, which interested state commissions would undoubtedly, if consistent, be inclined to force out of business. A wrong merely by one year of existence does not automatically become a right. If there is to be any "grandfather" clause in motor coach regulation at all, it ought to go back at least to the Buck-Kuykendall decision as recommended in the examiner's report.

Another equally unjustifiable stand of the A. A. A. is its objection to the regard shown for "existing agencies" in the examiners report. Its counsel said that if such regard for "existing agencies" had obtained in the past, Congress might have held up telephone service as detrimental to the telegraph, or electricity as affecting the candle and kerosene trade. The fact of the matter is that the examiner's report recommends consideration of only such an existing agency "the continuation of which is important to the community served by it." If a motor line threatens to put a rail line out of business and if the rail line is not needed by the community, then the rail line need not be considered. If, on the other hand, the rail line is necessary to the community and it cannot operate profitably with highway competition, then there is another aspect to the "public convenience" of the motor line other than the mere fact that some few members of the community desire it.

There are other points of difference, existing or potential, on proposed motor coach regulation and the varying viewpoints will doubtless have to be presented at Congressional committee hearings when legislative action gets under way. The railroads may well need all the support they can get from business men and leading citizens everywhere to insure adequate consideration for their views. Should they not organize now to secure this public support?

The Motor Transport Division of the A. R. A. can perform a distinguished service for the railroads if it will undertake to study and disseminate the facts to railroad men and the general public.

In the proposed legislation there are now unbounded possibilities—for good or evil. The motor vehicle may be strengthened as an advantaged competitor; it may be forced to compete on more equal terms; its co-ordination with railroad service to the mutual advantage of all may be fostered, or endangered. Railroad earnings for years to come will be affected favorably or unfavorably by the outcome. Should not there be vigorous and prompt organized effort to make sure that this outcome will be favorable?



Seven Trucks Receiving and Discharging Freight at the Trenton, N. J. Freight House

Operation and Maintenance of Trucks in P. R. R. Freight Service

A total of 2,760 railroad miles and 845 stations served daily—large fleet maintained with a minimum of equipment, men and spare parts

IN October, 1923, Scott Brothers, Inc., Philadelphia, Pa., inaugurated for the Pennsylvania System, its first motorized railroad line-haul l. c. l. route which extended from Philadelphia, Pa., to Downingtown, a distance of 32 miles, serving 27 stations. The l. c. l. motorized routes have rapidly increased until, at the present time, Scott Brothers are operating for the Pennsylvania 16 routes in the Eastern District which extend into Pennsylvania, Delaware, Maryland and New Jersey. The daily operation in this district covers 1,500 railroad miles, serving 453 stations.

The operation has been extended to the Western District, which includes Pennsylvania and Ohio, with Pittsburgh as the headquarters. Nineteen routes have been established by Scott Brothers in this district, which covers daily 1,200 railroad miles, serving 392 stations.

tractor hooks onto the semi-trailer and takes it to its destination where it is spotted for unloading, after which the tractor immediately hooks on and returns with another load. This operation has saved the railroad considerable time and money by eliminating the necessity of using switching locomotives and car floats to transfer cars over the Delaware river between Camden and Philadelphia.

Five-ton trucks with rack bodies are used for hauling the l. c. l. freight. A tarpaulin is provided for each truck to protect the load during wet weather. Each truck is manned by two men who load and unload the truck.

The trucks are operated on regular schedules. They start out at a certain time in the morning and are supposed to reach each freight station along the route at a certain time. The schedules are so arranged that one truck meets another and transfers freight assigned for connecting points.

The truck master (driver) is responsible for the truck and the freight it carries. Way bills, with notations of damaged or opened boxes, crates or cartons, if there be any freight of this kind, are checked over to him by the delivery station agents and recorded by the receiving agents. Daily records of the truck operation, showing the tonnage, mileage and other necessary information, are made up. In addition, mechanical and service items are enumerated on a form after each day's work. One of these forms is shown in an illustration. These trucks are handling for the Pennsylvania a daily average of approximately 12 tons of l. c. l. freight per truck.

Since the inauguration of this service, the Pennsylvania has materially reduced the cost of providing l. c. l. service between local points and has expedited the movement of freight over its own lines and in deliveries to connecting lines. Whenever possible the routes are laid out to parallel the Pennsylvania tracks.

Organization of the Maintenance Department

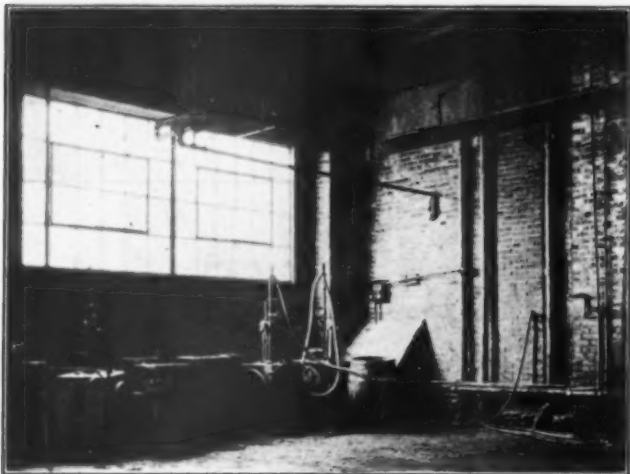
The equipment operated by Scott Brothers consists of 117 trucks, 55 of which are assigned to railroad service; 35 trailers—10 assigned to railroad service; 3 service cars—one located at Pittsburgh and two at Phila-



A Corner of the Garage at Philadelphia Showing Two Spare Motors Receiving a General Overhauling

In addition, three tractors hauling 10 semi-trailers, with van type bodies, are used in Philadelphia to transfer freight from the freight station in Philadelphia to the freight station in Camden, N. J. The semi-trailers are loaded by Pennsylvania employees and sealed. A

delphia; one inspection car, and 18 automobiles which are used by the transportation foreman and other officers of the company. All of this equipment is serviced and repaired by the maintenance department, headed by a superintendent of maintenance. The main garage is located at Philadelphia where all overhaul repair work is done. This garage will house 75 units of equipment.



This Is Where the Trucks Are Washed by Soap and Water, Pressure Being Built Up to 300 lb. by an Electrically Driven Pump

Another garage is located at Pittsburgh where 25 units are given running repairs. At the garage at Trenton, N. J., 17 units receive service attention. Located at the Philadelphia garage there are six mechanics (one working at night, a painter and his helper, two blacksmiths, one carpenter, one stockman and one lubricating man, who works at night. This force is headed by a foreman. One mechanic and a helper are stationed at Pittsburgh and one mechanic at Trenton.

The mechanics are general repairmen, not specialists. Thus, they are able to make repairs to any part of the chassis, do any kind of motor work, repair and adjust

Motor Freight Lines Operated for the P. R. R.

EASTERN DISTRICT	
From	To
Philadelphia, Pa.	West Chester, Pa.
Philadelphia, Pa.	Trenton, N. J.
Philadelphia, Pa.	Mount Holly, N. J.
Camden, N. J.	Elwood, N. J.
Trenton, N. J.	South Amboy, N. J.
Camden, N. J.	Newfield, N. J.
Trenton, N. J.	Phillipsburg, N. J.
Perth Amboy, N. J.	Toms River, N. J.
Philadelphia, Pa.	Downingtown, Pa.
Philadelphia, Pa.	Wilmington, Del.
Philadelphia, Pa.	Trenton, N. J.
Wilmington, Del.	Port Deposit, Md.
Trenton, N. J.	Rahway, N. J.
Whitings, N. J.	Sea Girt, N. J.
Jamesburg, N. J.	Sea Girt, N. J.
Philadelphia, Pa.	Trenton, N. J.

Where Trucks Are Housed in Eastern District	
Number	Location of Garage
11 (includes three trailers)	Philadelphia, Pa.
7	Trenton, N. J.
2	Elkton, Md.
1	Lancaster, Pa.
1	Downingtown, Pa.
1	Woodbury, N. J.
1	Camden, N. J.
2	South Amboy, N. J.
1	Point Pleasant, N. J.
1	Sea Side Heights, N. J.
1	Toms River, N. J.
1	Jamesburg, N. J.
1	Rahway, N. J.
1	Phillipsburg, N. J.

PITTSBURGH DISTRICT	
From	To
Pittsburgh, Pa.	Rochester, Pa.
Pittsburgh, Pa.	Clairton, Pa.
Pittsburgh, Pa.	Verona, Pa.
Trinway, Ohio	New Comerstown, Ohio
New Comerstown, Ohio	Dennison, Ohio
Bridgeport, Ohio	Wheeling, Ohio
Bridgeport, Ohio	Wellsburg, Ohio
Massillon, Ohio	Wooster, Ohio
Alliance, Ohio	Columbiana, Ohio
Rochester, Pa.	Columbiana, Ohio
Parnassus, Pa.	Braeburn, Pa.
Parnassus, Pa.	Brackenridge, Pa.
Mamouth, Pa.	Gratztown, Pa.
Mamouth, Pa.	Andrico, Pa.
Newark, Pa.	Ruffsdales, Pa.
Brownsville, Pa.	Uniontown, Pa.
Clairton, Pa.	Allenport, Pa.
Burgettstown, Pa.	Carnegie, Pa.
Burgettstown, Pa.	Bridgeville, Pa.

Where Trucks Are Housed in Pittsburgh District	
Number	Location
5	Pittsburgh, Pa.
1	Coshocton, Ohio
1	Uhrichsville, Ohio
1	Staubenville, Ohio
1	Massillon, Ohio
1	Alliance, Ohio
1	New Brighton, Pa.



One of the Tractors with a Semi-Trailer with a Van Type Body Used for Terminal to Terminal Transfer

carburetors, and make any electrical repairs. Electrical repairs are limited by the fact that acetylene is used for lighting the trucks. The main reason specialists on one repair job are not used is that specialists cannot be

1	New Kensington, Pa.
2	Greensburg, Pa.
1	Connellsville, Pa.
2	Brownsville, Pa.
1	Charleroi, Pa.
1	Carnegie, Pa.

sent out on the road to repair trucks that have failed while in service. It requires all-around mechanics to do this kind of work. When it is necessary to hire mechanics, only truck mechanics are considered. It has been found that the mechanics accustomed to repairing only pleasure cars find it difficult to adjust themselves to the heavy truck repair work.

The shop facilities at Philadelphia consist of three one-ton monorail chain hoists, a small toolroom lathe, a 20-ton Manley hydraulic press, a 12-in. vertical drilling machine located in the blacksmith shop, and a full

[illegible]

**This Card Is Used to Show the Labor and Material Charges
for Each Repair Job**

complement of small tools necessary for garage work. No grinding machines or other expensive machinery have been installed. All heavy machine work is sent out to job shops. The establishment of a fully equipped machine shop has been given much consideration. Located in Philadelphia are many machine shops that will handle all kinds of repair jobs. A careful analysis was made to compare the cost of sending work to job shops with the cost of doing the work in a fully equipped machine shop attached to the garage. In considering the investment required for expensive machine tools plus the overhead and carrying charges, it was found that

the forces. Furthermore, the fact that trucks are not equipped with elaborate bodies eliminates many men required for body repairs. However, all of the trucks have a chassis and motor which must be maintained. A schedule of repairs has been worked out whereby a



A Total of 60 Trucks Are Garaged Here Each Night

maximum of two trucks receive mechanical repairs at any one time, while one truck is in the paint shop. In other words, never more than three trucks are out of service at one time in the Philadelphia garage. The reason for this is that the unit system of repairs is employed. Three spare motors are always in hand completely overhauled ready to be installed. If a truck comes in for a new motor it can be installed and all other necessary mechanical repairs made in one working day which consists of 10 hours. Thus, a truck is out of service one day for a complete mechanical overhaul unless it requires a paint job, which requires three days additional time. Spare transmissions, differentials, steering columns, relined brakes, and clutch plates, repair radiators, spare electrical equipment and carburetors are always kept on hand. Thus, it can be seen that it is a simple job to overhaul a truck quickly. The replacement parts are repaired and put in stock during



Five-Ton Trucks with Rack Bodies Especially Designed for Railroad Work Are Used to Haul L. C. L. Freight

it was much cheaper to have the work done in job shops. The handling of machine work in this manner lends itself only to garages located in large cities in which are many job shops equipped to handle such work.

It will also be noticed that a very small force of men is required at Philadelphia to maintain 75 units of equipment. The elimination of the machine shop reduces

the time a truck is not in for heavy repairs. In other words, it is not a daily occurrence for a truck to receive heavy repairs. One of the illustrations shows two spare motors receiving a general overhauling. These were removed from trucks during the preceding week. The third spare motor was in the stockroom awaiting installation.

The trucks assigned to railway service must cover their routes daily on schedule time. Thus it is important that these units be properly maintained to prevent road failures. It is just as important for these trucks to cover their runs without failure as it is for a locomotive to make the run over a division without a failure if service expected from railroad transportation is to be maintained.

In order to help keep truck road failure down to a minimum, daily work reports must be filled out and the work reported properly and promptly done. At the end of each day's work, the truckmaster fills out a form, shown in one of the illustrations, the top part of which requests information for the traffic department and the lower part for the mechanical department. This form is made out in triplicate, one part going to the traffic department, one to the superintendent of maintenance, and the original kept by the man in charge of the garage at which the repairs are made. A rule is rigidly enforced to the effect that every item of work reported must be repaired before the truck is allowed to go back in service.

Maintenance department inspectors carefully go over each truck every month and fill out one of the forms

illustrated. A copy of this report is sent to the head of the mechanical department. He examines it and, if the conditions warrant it, the truck is ordered in for general repairs. In other words, general overhauling is determined by the inspector's reports and not by recorded mileage. Experience has proven that it is difficult to determine accurately a mileage basis which could be used as a yardstick for removing the trucks from service for general repairs. The reason for this is that truck service is entirely different from motor coach service. To begin with, the psychology of the truck driver is entirely different from that of a motor coach driver. The truck driver feels that he is operating a unit of equipment that is built to withstand severe service. The result is that the truck is more severely abused than the motor coach. It often happens that a truck is forced to operate for an extended period of time in first or second gear. This type of operation takes much out of the service life of the truck and is equivalent to many road-miles in high gear which do not show on the odometers with which these trucks are equipped. Thus, if a mileage basis were used for determining general repairs, it would be misleading, inasmuch as the mileage reading might show one thing, but the actual service

<div style="display: flex; justify-content: space-between;"> A Mileage Report FORM-44 7-13-27 1M MC </div>					
TRUCK NUMBER	READING	TRUCK NUMBER	READING	TRUCK NUMBER	READING

B

SCOTT BROS., INCORPORATED
PHILADELPHIA, PENNSYLVANIA

CONDITION OF TRUCK & TRAILER DAILY REPORT

Make of Car _____ License No. _____ Date _____ 19____

Chauffeur _____ Car No. _____

Is the steering gear in good condition? _____

Do the service brakes work properly? _____ Emergency brakes? _____

Are both headlights working? _____ Tail light? _____

Is engine running satisfactorily? _____ Is horn in order? _____

Trailer No. _____ Is trailer in good order? _____

What parts of truck need repairing or adjusting? _____

FORM 47 108 USE OTHER SIDE FOR FURTHER COMMENTS

C

BONUS PENALTY REPORT

Date _____ Truck No. _____

Name of Driver _____

Penalty No. or Nature of Offense _____

Location of Offense _____

Name of Supervisor Reporting Penalty

SIGNED _____

DATE _____

A—The Mileage Report Readings Are Taken from Odometers B—This Inspection Report Is Filled Out Daily by the Drivers of Trucks Used in Philadelphia; C—When a Driver Violates One of the Companies Rules or Is in an Accident, This Form Is Filled Out and Sent to the Superintendent of the Traffic Department

miles would far exceed the apparent miles shown on the meter. The result would be that while running the last thousand miles of the predetermined mileage for general repairs many undesirable road failures might occur. The method of making repairs from the facts

Date	Unit No.	Scott Truck No.	P. R. R. Truck No.
Time Left Garage		1st Trip	2nd Trip
Time Arrived at starting Zone Station			
" " " end of route			
" Starting for Return Zone			
" Arrived at Zone Station			
Did you load over 10,000 lbs. on any one load?			
Give total tonnage hauled			
" " mileage covered			
Was there any breakage?			
" " " shortage?			
Did you have any accidents? If so, give all facts.			
Did you have any delays? If so, give all data.			
Remarks:-			
Truckmaster, State conditions of your truck			
Condition of Motor		When Was Truck Inspected?	
When was it greased?		Oil Used	Gasoline Used
Are License Plates Clean and placed right?		Are Lights Good?	
Do you stop and look at all railroad crossings before passing?			
Truckmaster		Starting Time	Time Finished
Helper		Expenses	
Bell, Telephone Oregon (6418, 6417, 6418)			

This Form Which Supplies Information for Traffic and Mechanical Departments Is Filled Out Daily by Truck Drivers

set forth in the inspection reports has reduced road failures to a minimum. When a truck is ordered in to Philadelphia for general repairs, it is routed in in revenue service. The same system is used on the return trip.

When a truck fails on the road, the driver immediately calls the nearest garage for instructions. He explains to the foreman the nature of the trouble. It often happens the foreman can instruct the driver what to do in order to make temporary repairs that will permit him to continue on his route. If the failure requires the service of a mechanic one is dispatched immediately. Every effort is made to repair the truck so that the service will not be interrupted.

Greasing and Gasing the Trucks

Instead of using a mileage basis for changing the crank case oil and the grease in the transmission and differentials, a time basis is used. The grease in the transmission and differential is changed once every four weeks and the crankcase oil every three weeks. This work is done over the week end. The grease cups on the chassis and motor are filled every week. The crew is held responsible for keeping the motor clean and the batteries filled with water. The truck bodies are washed every week.

Minimum of Spare Parts Kept on Hand

The trucks receive oil and gasoline as they enter the garage for the night or leave in the morning. Each truck must have a full supply of gasoline and oil before starting for its day's work.

The value of the stock kept in the main stores de-

partment at Philadelphia is \$6,000, and at Pittsburgh and Trenton, \$500 each. This is a surprisingly small amount of stock to carry in order to maintain 117 trucks. The location of the garage in Philadelphia lends itself to a low stock inventory. The fact that any spare part required for the four makes of trucks operated can be quickly purchased in the city, does not make it necessary to buy parts in large quantities, thus needlessly tying up large sums of money. For example, one set of piston rings for each make of truck is carried in stock. When a set is used, a new set is purchased at once. A single item can be purchased just

SCOTT BROS., Incorporated WATER & DICKINSON STS. PHILADELPHIA

Truck No.	R. R. Units	Make
Driver		
General Upkeep		
Motor		
Valves		
Magneto		
Carburetor		
Transmission		
Generator		
Lights		
Radiator		
Governor		
Brakes		
Are Wheels Aligned Properly?		
Condition of Tires Front		
" " " Rear		
Condition of Canvas Cover		
Remarks:-		
Material used		
Time Working on Truck		
Inspected at		
Date	Name	

This Form Is Filled Out When the Monthly Inspection of Railroad Units Is Made

as cheaply as if an order had been placed for a large quantity.

The man in charge of the Pittsburgh garage buys parts as they are needed. He does not have to requisition the home office. Of course, Pittsburgh also lends itself to the policy of buying parts when needed. The main stores department keeps the Trenton garage supplied with repair parts. Of course, the foreman at Trenton can purchase parts to meet an emergency, or he can call Philadelphia on the telephone and in two hours time the requested material is delivered at the

garage. This quick delivery is made possible by the fact that there is hourly passenger train service to and from Philadelphia.

The stockman takes inventory every three months. As the material is handed out over the counter, the mechanic gives the stockman the job card like the one illustrated. The stockman writes down the name of the part and places after it the cost. On the opposite side of the card the mechanic places the time he started and finished the job. At the completion of the job, the card or cards, if more than one man worked on the job, are collected. These contain an accurate record of the labor and material charges to the truck on which the repairs were made.

The superintendent of maintenance designates what kind of materials should be used on the trucks. Thus, if brake lining is required, he will designate the brand to buy and leaves it up to the purchasing department to buy where it can be had at the lowest figure. It is figured by Scott Brothers that the head of the maintenance department is the best qualified man in the organization to decide as to what material should go into the trucks. If he makes an error in his judgment, he alone is held responsible.

South Jersey Lines Present Their Problem

AT Camden, N. J., on January 30 the New Jersey Public Utilities Commission continued its hearing on the application of the Public Service Transportation Company for authority to operate motor coaches between Camden and Atlantic City. The hearing was concluded on the following day at Trenton. The principal testimony on the two days—both at Camden and Trenton—was presented by the Atlantic City Railroad and the West Jersey & Seashore (subsidiaries respectively of the Reading and Pennsylvania) which are opposing the granting of the authority for the line, since the proposed motor coach operation would parallel their lines.

The railroads are basing their stand on the basis that they give excellent service, not only for full-fare passengers but for low-rate commutation as well; that their revenues in the case of full-fare passengers have been seriously depleted by motor coach competition; and that the continuation of their admittedly excellent service cannot be insured unless they have a fair proportion of the full-fare business, along with the commutation traffic.

President Leeds of the Atlantic City Chamber of Commerce, who is the head of important hotel interests, voiced vigorous objection to the proposed motor coach line as a competitor to the railroads. He said that any curtailment of Atlantic City's train service would be injurious to its best interests and produced resolutions from several Atlantic City business houses supporting his view. He also objected to the coach lines because of the fire hazard involved in their blocking Atlantic City's streets. As bearing on the inability of motor coaches to handle passengers en masse, as the railroads can, he cited the inability of some coach lines to provide return transportation for passengers whom they brought to the resort city on some busy days last summer. The secretary of a local automobile club testified opposition to the granting of the application, on the grounds that it would result in further unnecessary congestion on the highways.

Testimony by the railroads was largely in the form of exhibits giving traffic statistics, divided among the various classes of tickets, for specific stations on the line. P. S. Lewis, superintendent of the Atlantic City Railroad, testified regarding some of the operating peculiarities of the property—the handling of 40 per cent of the year's business during July and August, traffic in those two months being 300 per cent of that in the average winter month. He also told of the high character of physical standards on the line—130 lb. rail and automatic train control throughout, high speed locomotives and modern equipment, much of which lies idle 10 months out of the year.

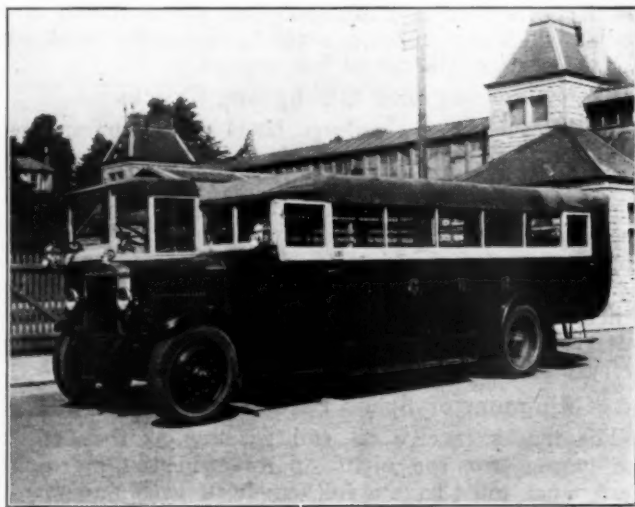
Testimony by the Pennsylvania gave details of passenger traffic trends at a number of stations. At one station, Collingswood, full-rate passengers to Camden and Philadelphia in 1921 totaled 8,497. In 1927 their number had dwindled to 3,499 whereas passenger trips on the various forms of low-rate commutation tickets rose from 261,000 to 288,100. Total passengers carried rose 8 per cent but because of the smaller proportion of full-fare business, gross revenues fell off 6 per cent. At another point, for the same reason, a decline in business of 3 per cent was accompanied by a drop of 17 per cent in revenues. At still another point, an increase of 5 per cent in the volume of business had as its accompaniment a decline of 20 per cent in revenues.

The Atlantic City Railroad in 1927 had a deficit after charges of \$771,511, as against \$241,429 in 1926 and \$135,232 in 1925, which last was the year when the motor coach competition began to become a serious matter. The road has a book investment of \$16,938,316 and has had deficits after charges regularly for many years—none, however, nearly as great as that suffered in 1927.

The road, like the West Jersey & Seashore, filed exhibits showing the trends of the various classes of tickets at individual stations. In general these trends were toward an increase in the low-rate business and severe declines in full-fare tickets. Between Atlantic City and Camden-Philadelphia 1927 traffic volume showed a decline of 9 per cent under 1921 whereas revenues dropped 14 per cent.

Both the roads involved are peculiar in that they receive a much higher percentage of the revenues from passenger service than is usual. In 1927, for instance, the Atlantic City's passenger revenues were 57.8 per cent of the total.

* * *

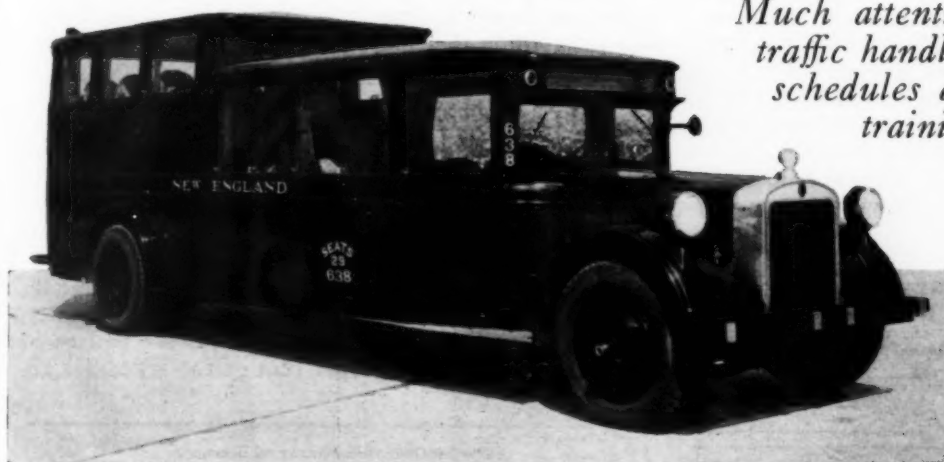


A Great Western (England) Highway Coach

N. E. T. Systematizes Operations

Much attention has been given to traffic handling rates, ticket forms, schedules and the selection and training of operators

Part I



An A. C. F. Parlor Observation Coach in New England Service

THE first route operated by the New England Transportation Company, highway subsidiary of the New York, New Haven & Hartford, incorporated in June, 1925, extended from Branchville, Conn., to Ridgefield, Conn., a distance of 4.4 miles. By December of the same year the route of mileage was 184.2, with a daily total 1,828 coach-miles operated. The longest of the coach runs was 63.7 miles while the shortest was 1.7 miles. The 16-page timetable issued in July of last year, however, includes 40 routes that cover 1,066 highway-miles in an area of approximately 30,000 square miles. A total of 575 daily trips are operated, requiring 80 coaches with 72 spare coaches to protect peak loads on Saturdays, Sundays and holidays, and to handle special parties. A total of 5,500,000 coach-miles and 3,750,000 passengers are carried per annum. The figures covering the first half of 1927 indicate that a total of 6,000,000 coach-miles and 4,500,000 passengers would be carried during the year.

Thus, in a period of a little over two years the N.E.T.

has passed since that time remarkable strides have been made in this department, particularly with respect to the standardization of forms and the compilation of rules for the government of employees. In addition there has been issued a complete traffic manual and a complete set

[illegible]

The Two Sides of the Service Card Kept in File for Each Operator

of fare tickets; and progress has been made in the training of operators and the dispatching of equipment.

Making Up Schedules

The summer schedules issued, effective July, 1927, cover 40 N.E.T. routes and five routes operated by affiliated companies. The general schedule, which covers 575 daily trips, consists of 16 pages, including a map showing the territory covered by the routes and the connections made with the N.Y.N.H. & H. railroad lines. It includes a list of all the motor coach terminals, together with the telephone number of each. Some 130,000 copies of the general schedule are printed each year and distributed to all New Haven railroad stations and to connecting railroad lines which distribute to their connections. Copies are also left at hotels, resort bureaus, travel information bureaus and many of the larger mercantile houses and manufacturing plants. In addition to the general schedule, individual leaflets are printed

[illegible]

This Terminal Report Is Made for Each Day for Every Route

Company has expanded until now it is the largest steam railroad motor coach subsidiary in the United States, and larger than all but a few independent coach companies. An outstanding feature of its career is that there has been a minimum of confusion during this comparatively short period of rapid growth, as each department has been developed and expanded in a sys-

for each route and not only distributed at railroad stations, but a generous distribution is accomplished through hotels, stores, travel information bureaus, etc., so that the public can become familiar with the routes.

New schedules are printed twice a year. They are made up in much the same manner as railroad schedules. Requests are often received from different communities asking for new routes to serve them. When such a request is received, a traffic survey is made to determine whether the proposed route will pay its way

and it has two hands on the dial. As the coach speeds up one hand pushes the other up with it. The longer of the two hands returns to zero when the coach comes to a stop, while the shorter hand remains at the maximum speed attained. Thus, if the coach is run at 35 m.p.h. the short hand on the dial remains at that position. The keys for setting the hands back to zero are in the possession of the inspector at each terminal. When an operator exceeds the maximum speed limit he is disciplined.

There are many reasons why the schedule time for a run may not always be maintained, as, for example, highway congestion on Saturdays, Sundays and holidays, accidents, road construction, and, in the winter, snow and ice. Despite these handicaps, the figures of the company show that 94 per cent of the schedules are

Form 30-T-N.E.T.
**NEW ENGLAND TRANSPORTATION CO.
OPERATOR'S DAILY REPORT**

Condition of Coach when starting day's run. _____ Operator _____ Date _____

TOOL CHECK ROUTES _____
☐ OK ☐ Missing

If Missing, State _____

Odrometer Readings

Coach	Start	Finish	TIME WORKED
			From To
			M M
			M M

REVENUE TRIPS

Coach	LEAVE	TIME	ARRIVE	TIME	PASSENGERS Leaving	Arriving	REPORT DELAYS HERE

SPECIAL PARTIES

Coach	From	To	Lv.	Returned	No. Pass.

NON-REVENUE MILES

Coach	From	To	Lv.	Arr.	Reason for Movement

If engaged in any altercation with or among passengers or if passengers express any dissatisfaction with service, check in square provided and explain on reverse side in space provided, on white copy. ☐

In Operating a Double Head or Extra, Show (D.H.) in Delay Column

THIS COPY TO BE DIRECTED TO SUPT. DAILY

The Comprehensive Daily Report Filled Out by the Operators

or whether it can be justified as a public necessity and convenience. A study is made of the highways involved to determine whether they are satisfactory for motor coach operation. Finally, the attitude of the town, city or highway and other authorities toward granting permission for the operation is ascertained.

The earnings of each route are closely watched. Each month a statement is prepared showing the earnings of all runs for each route, together with the cost per mile on each route. If the monthly statements consistently show that a certain route does not pay, application to the public authorities is made for permission to discontinue it. There are about 10 schedules put on during the summer months which serve the various summer resorts along the New England coast. These are discontinued during the winter months.

After the schedules are once established, the next problem is to maintain them. The schedules are made up on the basis of an average speed of 20 m.p.h., with a maximum permissible speed of 30 m.p.h. The maximum speed ruling is strictly enforced. A speedometer has been devised that automatically registers the maximum speed at which the operator runs his coach. The speedometer registers only miles per hour,

Form 10-N.E.T.
**NEW ENGLAND TRANSPORTATION COMPANY
Application for Employment**

NAME _____ Filed _____ 192__

ADDRESS _____

Place of Birth _____ Date of Birth _____

Are you an American Citizen _____ Are you married _____

No. of Persons dependent on you for support _____

Have you ever been employed by the N.Y., N.H. & H.R.R.Co., or any of its subsidiary companies _____

If so, give full and complete answers to the following questions:

1. Give date of entering and leaving service _____
2. Name of Company _____
3. Division _____
4. By whom Employed _____
5. Employed as _____
6. Reason for leaving service _____

What position are you desirous of filling with the New England Transportation Company _____

Have you any physical infirmities _____, if so, state the nature of same completely _____

Give the names of States in which you now have a license to operate motor vehicles _____

Has any license ever held by you been revoked by any public authority _____, if so, state nature of same, dates, etc. _____

Record of applicant's service for last five years in continuous order to date:

DATES		EMPLOYED		In SERVICE of Firm or Company	UNDER Whom	REASON FOR Leaving
From	To	As	At			

Dated _____ (Sign here) _____

Witness _____ My present address is _____

By Means of This Form the Previous Record of a Prospective Operator Is Clearly Set Forth

maintained on time during the periods of congested traffic, and 97 per cent at all other times.

Selection and Training of Operators

So far as possible, employees are selected from former employees of the New Haven Railroad, because these men have had instilled into them during their railroad experience an appreciation of what safety means. An operator is held responsible for: (a) the safe operation of the coach; (b) the proper operation

of the mechanical units of the coach; (c) running the coach according to schedule under normal conditions; (d) the proper display of all lights; (e) the proper display of destination and route sign; (f) the safety and comfort of the passengers; (g) the collection and proper accounting of fares.

The New England Transportation's Highway Motor Coach Routes

Route	Mileage	Fare	No. of round trips daily†	Kind of service*
Boston-Providence	45.0	\$1.25	16	Competitive and supplementary
Providence-Bristol	16.5	.40	28-4	Co-operative
Providence-Norwich	52.1	1.85	4	Co-ordinating
Providence-Worcester	42.6	1.25	15	Co-ordinating
Worcester-Fitchburg	25.4	.90	19	Supplanting all trains
Providence-Hartford	74.6	3.25	5-2	Co-ordinating
Hartford-N. Grosvenordale	63.0	2.25	1-2	Co-ordinating
Hartford-New London	44.2	1.75	6	Co-ordinating
Norwich-New London	13.8	.35	5	Co-ordinating
Fall River-Warren	10.6	.30	8-3	Co-ordinating
South Braintree-North Easton	14.0	.45	5-12	Partial relief of trains
Whitman-Bridgewater	6.8	.27	7-3	Supplanting all trains
North Easton-Brockton	15.7	.52	1-1	Supplanting all trains
Brockton-New Bedford	36.6	1.30	7-2	Substitution for round about rail service
Taunton-Fall River	15.9	.55	7	Elimination of local stops and some trains
Brockton-Nantasket Beach ..	22.3	.75	15	Summer service
Brockton-Plymouth	26.3	.80	3	Co-ordinating and supplementary
No. Easton-Canton Jct.	10.1	.30	7	Elimination of local stops and some trains
River Point-Hope	2.9	.11	6	Supplanting all trains
Wickford Jct.-Wickford	3.0	.10	10	Supplanting all trains
N. Scituate-Rice City	23.8	.50	3	Co-ordinating
New Bedford-Hyannis	47.3	1.85	2	Co-ordinating
New Haven-Hartford	37.5	1.55	16-1	Competitive and supplementary
New Haven-East Hampton, Conn.	35.6	1.20	3-4	Partial substitution for trains
Willimantic-South Coventry ..	7	.25	14	Co-ordinating
South Coventry-Bolton	8.5	.35	3	Co-ordinating
Plymouth-Hyannis	36.1	1.50	3	Co-ordinating and supplementary
Hyannis-Chatham	20.1	.75	7	Co-ordinating and supplementary
Hyannis-Woods Hole	29	1.10	2-1	Co-ordinating and supplementary
Hyannis-Provincetown	48.5	1.75	2	Co-ordinating and supplementary
Hartford-Hammonasset Beach ..	45.1	1.50	1	Summer service
Hartford-Middletown	20.0	.65	4	Co-ordinating
Hartford-Suffield	21.0	.60	3	Supplanting all trains
Hartford-Springfield	26.4	.95	16	Competitive and supplementary
Hartford-Northampton	50.0	1.85	4-7	Competitive and supplementary

Route	Mileage	Fare	No. of round trips daily†	Kind of service*
Hartford-Willimantic	28.1	1.15	10	Co-ordinating
Willimantic-Providence	46.5	2.10	5	Co-ordinating
New Haven-Simsbury	42.2	1.55	2	Co-ordinating
Danbury-Canaan	59.7	1.90	2-5	Supplanting local service
Danbury-So. Norwalk	24.2	.90	4	.....
New Haven-Danbury	41.1	1.40	3	New territory
Ridgefield-Branchville	4.4	.20	11	Supplanting all trains
Canaan-Great Barrington	12.5	.45	3	New territory
OPERATED BY OTHER COMPANIES				
Providence-Fall River	17	.60	45	(Interstate Ltd. Motor Coach Co.)
Winsted-Hartford-Torrington ..	56	1.25	7	.....
Boston-New York	2.40			.....
Providence-New Bedford	12.2	1.00	29	{5.00 nights 7 {6.50 days 2 (Union St. Railway)
Providence-Newport	25.6	1.20	17	(Colonial Coach Co.)
Providence-Attleboro	13.6	.44	18	(Nantasket Transportation Co.)

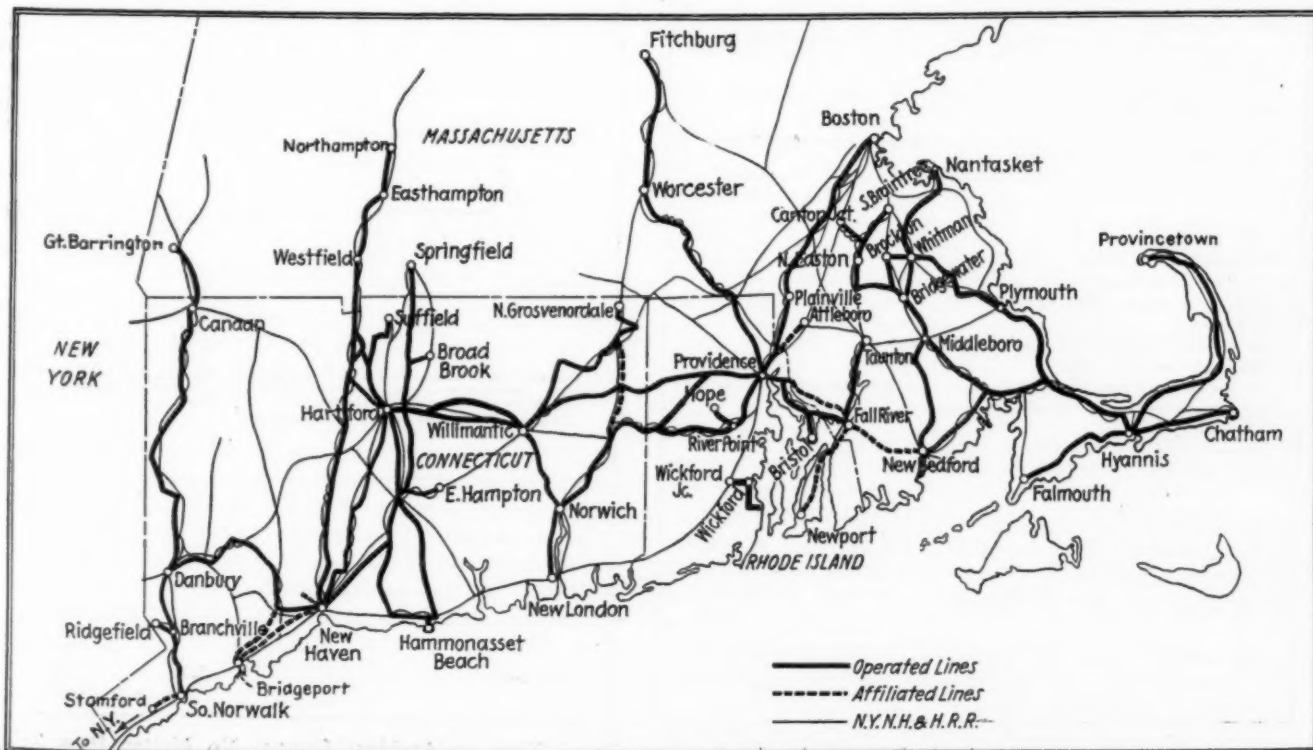
Grand total1,620.3

* Designations here give only a salient characteristic of service. Competitive indicates that the line is operated to oppose an independent operator who is competing with the railroad. Co-operative indicates that the line is operated in conjunction with another company. Co-ordinating indicates that coaches are used to eliminate local stops by trains with which coaches connect at important points, thereby improving rail service. Naturally, a given service might be competitive and co-operative and co-ordinate with trains all at the same time. In this column, however, only the most salient characteristic is mentioned. Other terms used under this heading are self-explanatory.

† Where two figures are given, second indicates round trips over a portion of the route.

The age limits for new men are from 25 to 35 years. New operators are selected by the division superintendent. Before any operator is allowed on the road in charge of a coach, he is given a physical examination (color, sight and hearing), and a period of training, the length of which depends somewhat on his own personal equation. A complete set of rules has been prepared governing the handling of motor coach operation. Each operator must become familiar with these rules and be able to pass an examination on them. The penalty for infringement is clearly set forth, and is religiously applied for any infraction. Before a new operator can take over a route, he travels with an experienced operator who teaches him the route, street by street.

The operators must acquaint themselves with the me-



The Coach Routes of the New England Transportation Company Cover an Area of 30,000 Sq. Mi.

takes it out on the road. Operators are also trained to familiarize themselves with the sound made by the coach while running and if any unusual sound is noted they try to find the cause and report it. If they cannot find the cause, they report the fact of the unusual sound at the earliest possible moment.

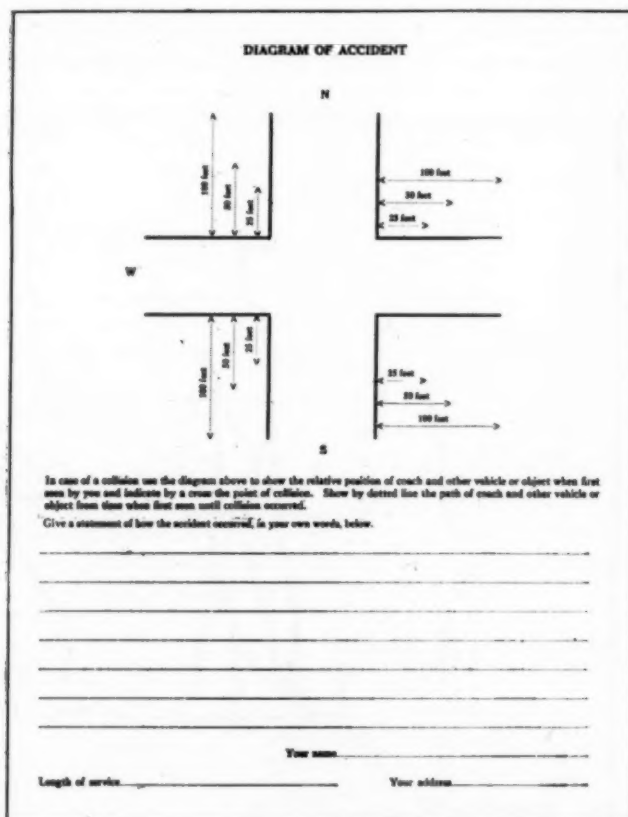
Each operator buys his own uniform, which usually lasts him one year. An operator may advance in the organization via the steps of starter, supervisor, superintendent, general superintendent and manager. Since the formation of the company over 20 operators have been promoted to responsible positions.

A transportation foreman is assigned to each division. It is his duty to assign equipment and operator to the route, supervise the operators and see that the schedules are covered. Located at the main garage at Providence, R. I., are three dispatchers and one assistant who work in eight-hour shifts.

The regular operators must report for duty 15 min. before leaving time for their first trip, or, if for any good reason they are unable to report, they must give notice at least one hour before leaving time. The operators are required to make an examination of the bodywork of their coaches before leaving the garage. In the event of defects, a report is made to the superintendent or his representative. The operators must also make entries on the driver's defect card at the end of the day's work of any coaches not in first-class condition for service. Careful inspection is made by the operators of seats, windows, lamps, electric signal bells, and all other parts of the body to see that they are in proper condition and in no way liable to cause injury to

**This Form Is Used by the Operator to Secure the Names
of Witnesses When an Accident Occurs**

cordance with schedule. The operator must always test the brakes, light, horn and other apparatus to be sure that the coach is in proper running order before he

[illegible]

An Accident Report Is Completely Filled in by the Operator Every Time an Accident Occurs, No Matter How Trivial

persons or damage to property. The operators must keep papers and rubbish picked up and the coaches properly ventilated. When the coaches are put in the garage, all windows are closed by the operator.

The operator of any coach which becomes disabled in service promptly telephones the dispatcher of the route giving him the complete information as to the nature of the defect and whether or not it is possible for him to bring the coach into the terminal safely. On such lines which are not regularly covered by dispatchers, the nearest company garage is advised by telephone.

Reporting Accidents

From the beginning of operation of the company on August 10, 1925, 45,756 coach-miles have been operated for each personal injury and none of these has been serious.

Up to the present writing no fatal accident has occurred. A complete report and investigation is made of every accident, however slight, to persons or property in connection with or near any coach.

In case of an injury to a passenger, the first duty of the operator is to render first aid and, if necessary, secure the services of a doctor. After the passenger is cared for, the operator must then proceed to secure information so as to fill in intelligently an accident report shown in one of the illustrations. The operator first obtains the name and address in full of all witnesses on or near the coach when the accident occurred, including the badge number of any policeman, fireman or private officer, postman, or uniformed employee of the company or other public service companies. A special form has been issued for witnesses to fill in. This form is reproduced in one of the illustrations.

The operators have been so trained to secure all facts in connection with an accident with the result that when an accident report is submitted, it contains a detailed picture of just what happened. The report is submitted to the superintendent or transportation foreman at the end of the operator's tour of duty. After a thorough investigation, the division superintendent sends a confirming report to the manager with recommendations as to what disciplinary action, if any, should be given to the operator.

[The second and concluding part of this article will appear in next month's *Motor Transport Section*.—EDITOR.]

Reo Offers 143-Inch Motor Coach and Truck Chassis

A GENERAL utility chassis, with a six-cylinder engine, four-wheel brakes and a wheelbase of 143-in., and suitable for both motor coach and high-speed, light-weight motor truck work, has been placed on the market by the Reo Motor Car Company, Lansing, Mich. For motor coach work the 143-in. chassis is fitted with a 12-passenger body, the one illustrated being a parlor-type body manufactured by the Fitzjohn Manufacturing Company, Muskegon, Mich.

The six-cylinder engine is cast in block and develops 50 actual horsepower at 2,000 r.p.m. Engine lubrication is by force feed to the main bearings, timing gears and rocker arms, and by splash to the cylinder walls, cam shaft and connecting rod bearings. The cooling system is by positive water circulation driven by a gear-driven centrifugal pump. The flat vertical tube radiator has an outer casing which is easily removed for repair.

The carburetor is of the automatic float feed type. A portion of the intake air is drawn from the crankcase, while the intake manifold tube is heated by exhaust gases. The chassis has a two-unit, six-eight volt starting and lighting system.

The four-wheel brakes are of the internal expanding type mechanically operated, while the emergency brake is an external contracting type located in the transmission drive shaft. The front axle is a drop forged I-beam especially constructed for front wheel brakes, while the rear axle is of the semi-floating type. The turning radius of the chassis is 26 ft.

As regular equipment of the chassis, the Myers magazine oiler is provided. This is used on the spring shackle



The 143-in. Reo Chassis Fitted with a Fitzjohn Parlor Type Body

bolts and spindle bolts and consists of an oil reservoir which is filled with motor oil about every 3,000 miles, the oil being fed to the bearing service through a wick. This insures a flow of clean filtered oil to the bearing only when the part to be oiled is in motion, and is, therefore, economical in operation.

The wheels are of the artillery type made of malleable iron. They are fitted with 32 in. by 6 in. pneumatic tires.

Insutape for Motor Coach Exhaust Pipe

INSUTAPE, which has long been in use as an insulation of steam pipes on locomotives and railway cars is now being used to cover the exhaust and heater pipes of motor coaches. It is contended that the long motor coach exhaust pipe, running underneath the coach for its entire length, can be a source of discomfort to passengers if it is left bare, since, being uninsulated, the heat from the exhaust pipe rises through the floor of the coach in hot weather, and is dissipated before being put to use in heating the coach in cold weather. Insutape is claimed to be the only practical covering available for motor coach exhaust pipes which will not shake loose, disintegrate or lose its efficiency from the bumps and jars of the road.

Insutape consists of felted strands of asbestos fibres contained in a woven asbestos jacket. The springy fibres form millions of dead air-cells, the design being such that this covering cannot mat or pack when applied.

Insutape is spiraled around the pipe, fitting curves and bends as well as the straight pipe. It is firmly held by clamps applied under tension. Insutape is manufactured by the Union Asbestos & Rubber Company, Chicago.

I. C. C. Hears Arguments on Legislation

Truck regulation has few friends—All agree on some for coaches—Several exceptions filed

WASHINGTON, D. C.

REGULATION by federal authority of motor coach operation in interstate commerce on the highways was generally favored in the oral argument before the Interstate Commerce Commission on February 10 on the proposed report by Attorney-Examiner Leo J. Flynn recommending a plan of legislation for the regulation of motor vehicle operation in which members of state commissions would act as agents of the federal commission (See *Motor Transport Section* of January 28). Regulation of motor truck transportation, however, was vigorously opposed by representatives of the manufacturers and operators of trucks, on the ground that it would hamper the development of a new industry and that there is no demand for it among shippers. This opposition was so pronounced that at the end of the argument Alfred P. Thom, general counsel of the Association of Railway Executives, who had advocated regulation of truck transportation, suggested that it might be well for the present to require only a system of federal registration of motor trucks operated for hire in interstate commerce, with such reports as the commission might deem advisable, and that the commission continue its study of that subject without delaying its recommendations to Congress relating to the regulation of motor coach transportation.

N. A. C. C. Opposes Truck Regulation

The chief argument against regulation of truck transportation was made on behalf of the National Automobile Chamber of Commerce, and a similar position was taken by representatives of local associations of truck operators. There was very little objection to the proposal for a system of motor coach regulation and S. A. Markel, counsel for the bus division of the American Automobile Association, urged speedy legislation providing for a simple system of regulation. He said that the legislation should at first be simple and not restrictive and he seemed to prefer that it be confined to provision for the issuance of certificates of public convenience and necessity.

Says Railroad and Independent Motor

Lines Should Have Same Law

Mr. Thom praised the attorney-examiner's report in general but took exception to all conclusions in the recommendations which provide for different requirements as to motor common carriers subsidiaries of railroads and those not subject to the act to regulate commerce, saying that the regulation of motor vehicles should be uniform with reference to both classes and that no distinction should be made between them. He said that it is advisable to require certificates for the extension of a railroad or its service the same requirement should apply to an extension of service by motor vehicle or by joint rail and motor service. The Association of Railway Executives had previously filed a brief statement of exceptions to certain features of the report, in which these points were brought out and in which it was also urged that in any recommendations which the commission may make there shall be included a recommendation to exempt motor common carriers from the pro-

visions of the Clayton antitrust act, as the application of certain provisions of that act would greatly hamper the relations between a railroad and a motor subsidiary.

The problem of the commission, Mr. Thom said, is to find out how the public can be best served and to prevent invasion of territory already adequately served by an existing carrier if the new service would tend to impair that already in existence. Mr. Thom also said that if the commission undertakes to regulate the common carrier truck but not the contract or private carrier it would not reach the bulk of the motor truck traffic. In his rebuttal argument, however, he said that in view of the almost universal demand for motor coach regulation legislation for that purpose ought not be delayed unduly by consideration of how far regulation should extend in some other direction. He therefore suggested that the commission recommend a plan of regulation to be administered through local authorities, somewhat along the lines of the bills now pending, and that, if it finds difficulty as to the extent to which regulation should extend to trucks, it postpone that question until it has become more acquainted with the situation. In reply to arguments that the trucks do not really compete with the railroads Mr. Thom pointed to the decrease in l. c. l. tonnage handled by the roads between 1920 and 1926, while the carload freight was increasing, and said that no amount of argument as to the lack of competition between them can answer the figures.

Says Shippers Do Not Seek Truck Regulation

The National Automobile Chamber of Commerce was represented by A. J. Brosseau, president of Mack Trucks, Inc., chairman of its special committee, and C. C. McChord as counsel. Mr. Brosseau said that the evidence showed that there was no demand by shippers for regulation of trucks and that to regulate only common carrier trucks would reach but one or two per cent of the traffic, so that the common carrier trucks would be either forced out of business or compelled to enter the field of private carriers. He said that regulation would greatly retard the development of the truck industry by destroying its flexibility, its chief virtue, but that the situation was somewhat different as to motor coach lines because they afford the best service to the public when operating on fixed routes and with definite schedules. He also referred to the small percentage of motor vehicle traffic that is interstate.

A. A. A. Does Not Favor Consideration

For Existing Carriers

The principal objection presented by Mr. Markel to the examiner's report, which he described as a remarkable good piece of work, was in regard to giving consideration to existing agencies of transportation in passing on the issuance of certificates for operation of bus lines. He said that if the language of the report is used it means that the effect on the revenues of the transportation agencies already operating in the territory must first be considered and he contended that the public interest should be the paramount consideration. There is no logical reason, he said, in the idea that one public utility should be regulated for the protection of another

utility which might be giving similar service by a different medium.

L. H. Strasser, assistant general solicitor of the Washash, told of the number of motor coach lines operating between St. Louis and Kansas City, St. Louis and Chicago, and Chicago and Detroit, saying that they have taken away a large amount of passenger traffic from the railroads. He said that he recognized that motor transportation has its place but that the situation has been complicated by "wild-cat" operators, who evade state regulation by operating or selling tickets across state lines, and who cut rates and thus force further rate cuts by regular lines. A law should be framed providing for a system of federal regulation to curb this class of operation, he said. He also took the position that if contact trucks are to be exempted from regulation the regulation of the common carrier trucks would be seriously affected.

R. R. Bradley, speaking for the American Electric Railway Association, said that it had been urging regulation of motor vehicle transportation for three years and that it feels keenly that there should be some legislation now, to be amended later as the need for it develops.

S. A. Markel, for the A. A. A., praised the report of Mr. Flynn as a "remarkable piece of work" and said that "speaking for the fellows who are to be regulated" he was in favor of immediate legislation. He urged, however, that the regulation be simple at first, rather than restrictive.

Public interest and convenience and not effect on "existing transportation agencies" should determine granting of certificates for operation of motor coach lines, Mr. Markel contended.

The bus division favors a plan of regulation by state commissions, with right of appeal to the Interstate Commerce Commission, which on the whole is in line with the findings of the attorney examiner.

The principal objection presented by Mr. Markel to the adoption of the examiner's report was in regard to considering of "existing agencies" in granting certificates for operation of motor coach lines. He declared that if this language is used it means that the effect on the revenue of "transportation agencies" already operating in the territory must first be considered. The A. A. A. spokesman contended that public interest should be the paramount thing at issue.

"If the plan recommended is considered in granting bus lines the right to operate," Mr. Markel declared, "Congress might have held up telephone service as detrimental to the telegraph, and electricity as affecting the candle and coal oil industry."

"As far as we can determine, there is no logical reasoning connected with the idea that one public utility should be regulated for the protection of another utility which might be giving similar service by a different medium," he said. "Certainly there is no precedent for such procedure. As we understand it, regulation of all public agencies is for the purpose of advancing and protecting the interests of the public."

"The law should provide that the fact that an applicant for a certificate of convenience and necessity was in bona fide operation one year prior to the opening date of the legislative session at which the law is passed, and since then and at the time the application is made has been continuously so engaged, shall be considered prima facie evidence as to the convenience and necessity for such operation."

In reply to Commissioner Aitchison, Mr. Markel

said he agreed that the plan of having state commissioners act as agents presents some legal difficulties but he thought they could be overcome, and suggested that commissioners might sit together as joint boards but render their actual decisions after returning to their states.

He said he did not agree that state regulation has been ineffective but that it could not be expected to be effective where interstate commerce is concerned.

J. J. Ruster, representing the Camden, N. J., Chamber of Commerce, presented a resolution adopted by its transportation committee urging adoption by the commission of the examiner's report and favoring a coordination of all forms of transportation.

R. H. Culbertson, appearing on behalf of the Washington Motor Truck Freight Association, opposed the regulation of truck transportation, saying that of the 3,000,000 trucks in the United States only 7 per cent are operated for hire and that regulation would destroy their principal virtue, that of flexibility.

H. E. Mangum, for the Motor Truck Association, argued against the adoption of the recommendation relating to regulation of trucks transportation, saying that it is largely interstate traffic and that most of it is handled by private or contract carriers. He said that the National Industrial Traffic League and shippers generally take the position that the truck is a most useful transportation agency and ought to be allowed to develop along natural lines without restrictive regulation.

Joseph F. Hayes appeared for the Motor Car Association of North and South Dakota. The South Dakota Motor Coach operators, he said, are opposed to regulation, and although the motor coach operators generally have expressed themselves as being in favor of regulation they seem to desire as little regulation as possible at this time, confined mainly to a plan of certificates which will protect operators against excessive competition. Moreover, he said, the shippers do not want regulation of trucks.

Executives File Exceptions to Examiner's Report

The Association of Railway Executives has filed with the commission the following statement of exceptions to the examiner's report:

Comes now the Association of Railway Executives and presents the following exceptions to the conclusions in the proposed report of the Attorney-Examiner, in this proceeding:

1. It excepts to Conclusion No. 4 because it confines to carriers subject to the Interstate Commerce Act its recommendation that the revenues, expenses, and investments and other statistics incident to motor vehicle operations should be required to be regularly reported to the Interstate Commerce Commission and be declared by law as coming within the provisions of Section 15 (a) of the Interstate Commerce Act in determining net railway operating income under the provisions of that Act.

No exception is taken to this conclusion so far as it applies to railroads engaged directly in motor vehicle operations nor is exception taken to it as to railroads operating, through subsidiaries, motor vehicles, if common carriers by motor vehicle on the highways not subject to the Act are also brought within the provisions of this Conclusion.

Exception is taken, however, to the inclusion of railroad motor subsidiaries in the event that such carriers not subject to the Act are not included.

In other words, subsidiaries of carriers subject to the Act and carriers by motor vehicle not subject to the Act should be accorded like treatment.

2. It excepts to Conclusion No. 5, which deals with classification of accounts, for the same reasons that exception is taken to Conclusion No. 4. This Conclusion likewise is confined to subsidiaries of carriers subject to the Interstate Commerce Act and excludes common carriers by motor

vehicle not subject to the Act. It is submitted that both should be treated alike.

3. It excepts to Conclusion No. 6 because this Conclusion would permit a rail carrier to invade the territory of another rail carrier through the medium of joint rates and through routes, without any power in the Interstate Commerce Commission or a Board to pass upon the question. The only limitation in this Conclusion of the proposed report is that the motor vehicle operator must have a certificate of convenience and necessity from some regulatory body to operate.

It is respectfully suggested that a conclusion, reading substantially as follows, would relieve the proposed provisions of this objection:

"6. Carriers subject to the Interstate Commerce Act and their motor carrier operations should, if approved by the Interstate Commerce Commission, be authorized by law to participate in joint rates and through routes with common carrier motor bus and motor truck lines holding certificates of convenience and necessity from some regulatory body in substantially the same manner as they are now authorized to do with carriers now subject to the Act. The Commission, in determining whether or not its approval should be given, must give reasonable consideration, among other pertinent matters, to available transportation service by any other existing transportation agency operating in the same territory and to the effect which the proposed joint rates and through routes may have upon any such existing transportation agency, the continued operation of which is important to the communities served by it."

4. It excepts to Conclusion No. 16, which provides that the fact that an applicant for a certificate of convenience and necessity was in bona fide operation on March 2, 1925, and continuously since then and at the time application is made, shall be considered prima facie evidence as to the convenience and necessity of such operation, because from the standpoint of practical administration this presumption would give over-emphasis to private interest as compared with public interest.

Undoubtedly such operators are entitled to have due consideration given to the fact of continuous operation for the length of time contemplated, but the regulatory body would, without question, give such consideration without any express provision in the law.

It is, therefore, respectfully submitted that this Conclusion should be omitted.

5. It excepts to Conclusion No. 18 because its meaning is not clear.

It is assumed that the purpose of this Conclusion is to assure that reasonable consideration be given to the likelihood that the proposed service would be adequate and continuous and also to provide for authority in the proper regulatory body to require additional service over the route covered by the certificate as the needs of the public might demand from time to time. This assumption is based upon the language used in the body of the proposed report on page 73.

In the interest of clarity, therefore, the following is suggested in lieu of Conclusion No. 18:

"18. In determining the question whether a certificate of convenience and necessity should be granted, reasonable consideration should be given to the likelihood that the proposed service would be adequate and continuous, and all certificates should be granted subject to the right in the regulatory body to require the holder of same to furnish such additional service on the route covered thereby as the needs of the public might demand in the future."

6. It excepts to Conclusion No. 19 because, in addition to the requirement that rates be just, reasonable, not unjustly discriminatory, and not unduly preferential or unduly prejudicial, this Conclusion should include the requirement that tariffs be published and filed.

Accordingly, it is suggested that the following be added to this Conclusion:

"and should contain requirements with respect to publishing and filing tariffs similar to those now contained in the Interstate Commerce Act."

7. It excepts to Conclusion No. 21, which proposes to vest the regulatory boards with wide discretion in the administration of law, particularly in the matters mentioned in the Conclusion, because this provision, if enacted into law, would make for laxity and result in a lack of desirable uniformity of administration.

It has heretofore been urged in connection with Conclusion No. 4, that the same treatment should be accorded rail carrier motor subsidiaries and independently operated motor companies. The amendment, therefore, of Conclusion No. 4 as suggested and the discretionary powers contained in Conclusion No. 22 would cover adequately the purposes of Conclusion 21.

In view of these considerations, it is urged that this Conclusion be eliminated in its entirety.

8. It excepts to the language used in Conclusion No. 22, which provides that broad discretionary powers should be given to the regulatory boards in the matter of exempting interstate motor vehicle operations from any of the provisions of the law if such exemption would be in the public interest,

as in the case of small operators who are giving transportation service important to the communities served, but who might be unable to continue operations if required to comply with all regulatory provisions on account of the additional expense involved. This exception is taken because the evident purpose of this Conclusion is to empower the regulatory bodies, in view of the financial burden involved, to exempt small operators from certain minor provisions of the law, or rules or regulations made thereunder. It is not believed that it is intended that any motor operator, in the discretion of the regulatory body, be relieved from the major requirements as to certificates of convenience and necessity and as to rates, fares and charges.

Accordingly, in order to carry out the manifest intent of this Conclusion, the following amendments are submitted. Strike out the word "as" in the fourth line and add at the end of the following:

"Provided that such motor carriers shall not be exempted from the provisions of Conclusions 14, 15, 16, (if 16 is retained) and 19 hereof."

9. It excepts to Conclusion No. 23 because it is confined to passenger transportation. It is appreciated that this Conclusion was prompted by the fact that evidence introduced in this proceeding showing that "brokerage" in transportation of passengers for hire has been practiced and that no such evidence was presented as to such practices with regard to freight. It is possible that, in the future, freight may be included in such practices. As the provisions contained in the Conclusions of this report are recommended for the purpose of being incorporated into a regulatory law to deal with the future, it is submitted that the prohibition should include "brokerage" in freight.

Therefore, it is suggested that Conclusion No. 23 be amended by inserting in the first line of this Conclusion after the word "passengers" the words "and/or freight."

10. No exception is taken to the proposition of law stated in Conclusion No. 28 that the provisions of the Clayton Anti-trust Act are applicable to motor common carriers.

It is, however, deemed appropriate to point out certain inevitable consequences which would result:

(a) If the Clayton Act prohibits a railroad from acquiring an interest in a motor carrier if thereby competition is substantially lessened, then few existing motor lines can be acquired because the effect will, in most instances, be to lessen competition.

(b) A railroad company would probably own most or all of the stock of the motor carriers which it may organize or lawfully acquire. It would, therefore, have a substantial interest in the motor subsidiary and would be required to comply with the provisions of Section 10 of the Clayton Act even though they may not have common directors. A railroad should be permitted to take advantage of its purchasing and contracting power for the benefit of its subsidiaries.

(c) Lastly, if the provisions of the Clayton Act apply to motor common carriers and the Commission determines that the provisions of Conclusion No. 4 should apply to a motor common carrier subsidiary of a railroad, the rail carrier must deal at arm's length with its subsidiary, thus requiring the latter to operate as an independent unit, while, at the same time, requiring a practical unification of accounts.

It is, therefore, respectfully urged that in any recommendations which this Commission may make there shall be included a recommendation to exempt motor common carriers from the provisions of the Clayton Act.

11. Exception is taken to any and all conclusions which provide for different requirements as to motor common carriers subsidiaries of a railroad and motor common carriers not subject to the Interstate Commerce Act, because the regulation of motor vehicles should be uniform with reference to both these classes and no distinction in any respect should be made between them.

N. A. C. C. Opposes Truck Regulation

The National Automobile Chamber of Commerce in its statement of exceptions to the attorney-examiner's report, signed by C. C. McChord, R. Granville Carry and Frederick M. Dolan, of counsel, said "there is no necessity or public demand for legislation."

Other interested parties also filed statements of exceptions. The National Industrial Traffic League, representing the shippers, by its highway transportation committee, asked the commission for an extension of 90 days of the time for filing exceptions to the report, so as to allow its members time to consider it.

The L. C. L. Merchandise Container

By William T. Hoops

President, the L. C. L. Corporation



Container Handling Installation on the Lehigh Valley

DURING the past fifty years or more, there have been many improvements in methods of transportation, with consequent benefits to the parties most concerned, which are, first, the shipping and receiving public, and second, the railroads and those having money invested in them.

It has seemed strange, however, that among all the many changes in ways, means and methods which have resulted in either improvement of service or economies in operation, there has been until recently little, if any, change or improvement in the manner of handling the less-than-carload merchandise of a railroad.

It has been a matter of common knowledge for years that the so-called merchandise, or l. c. l., freight handled

by a railroad constituted but a small percentage of the total tonnage handled but used a percentage of railroad equipment entirely out of proportion to its tonnage, and also was the direct cause of a very high percentage of claims. This is set forth in detail in the tentative report to the Interstate Commerce Commission by Attorney Examiner Flynn, in Docket 18000, in the matter of motor coach and motor truck operation, wherein Mr. Flynn states, following a general discussion of l. c. l. tonnage, that:

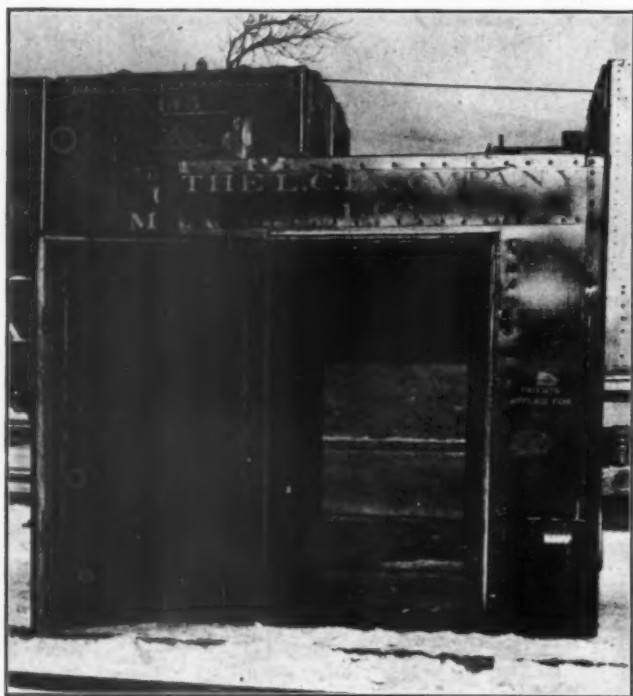
"Although the less-than-carload tonnage in 1924 constituted 3 1/3 per cent of the total tonnage handled by Class 1 steam railroads, it is stated that 25.7 percent of the railroads' equipment was used to handle it, and 32.2



The Container Speeds Up the Service to Patrons

per cent of claims paid were on this less-than-carload traffic."

The figures in 1924 would probably be fairly representative for other years, both before and after. For some years back it has been an ever present problem how to handle the absolutely essential l. c. l. tonnage in a manner satisfactory to the shipping and receiving pub-



A Container Opened

lic, and to produce reasonable returns to the railroads.

Through the vision of the late Alfred H. Smith, at that time president of the New York Central Lines, a new instrumentality and method was brought into being, and, after a trial period, has justified itself so as to warrant its extensive use by the railroads, and its adoption by those most interested in the movement of l. c. l. merchandise.

This new undertaking, which started in 1922 and has been gradually extended, is known as the less-than-carload (l. c. l.) container car method of transportation. The equipment consists of a standard low side gondola car, preferably at least 47 ft. long by 9 ft. 3½ in. wide, covered by the patents of the L. C. L. Corporation.

These containers are specially constructed as shown in accompanying illustrations, having a cubic capacity of 438 cu. ft.; the dimensions, outside width, 7 ft. by 2½, height, 8 ft. by 2½, length over the guides 9 ft. by 3½ in.; with inside dimensions, width 7 ft., height at eaves, 7 ft. 1 in., length 8 ft. 10 in. They are provided, as will be noted in the illustrations, with eyes at the four corners, with proper supporting straps, by which they can be lifted from the truck to the car or from the car to the truck by the use of an ordinary gantry crane. They are fitted into place in the car by the use of guides and slots so that each container is firmly held in place and all possibility of side sway or other change of location is avoided.

The original containers were constructed of wood, but since that time there has been developed a steel container with a special floor, and there is in process of development a further design to reduce the weight

so as to carry as little dead weight as is consistent with the load.

The present average weight of the containers is about 2600 lb. and the weight carrying capacity of the container itself has been limited from the start to 7,000 lb., leaving a wide margin of safety. Recent experiments on the latest containers have shown that they can be loaded to a maximum weight of about 9,000 lb. and necessary changes will be made so as to make that loading possible in future.

In practical use, the method of handling the container is shown by accompanying photographs, which illustrate the containers loaded in a battery of 6 on a car (a complete carload), the container itself, with inside view, and the container being unloaded from the car to the truck.

The container is used in two ways, as follows:

First, for transportation from one shipper to one consignee, this in cases where one shipper alone has enough tonnage to warrant using containers; second, the use of the containers by consolidators, who substitute themselves for the individual shipper or consignee and, by gathering up a large number of small packages, produce a container load very near to the maximum, and act as distributors at the point of destination.

From its inception the container idea appealed to shippers, and it has recently been extended so as to be adopted as standard by the largest consolidators of freight in the world, namely the United States Freight Company, which operate the Universal Carloading & Distributing Co. and other subsidiaries having to do with



Doors Are Securely Locked

the gathering together of freight in small lots, and either consolidating it into larger l. c. l. units, or into carloads, as worked out to the best benefit of all concerned.

One of the largest problems of the railroads in handling l. c. l. freight has been in providing station facilities, labor and billing, and therefore, in visualizing the use of the container and the obtaining of economies which might be fairly divided between the railroads and

the shipping and receiving public, it became essential that some new method be devised to obviate the handling and rehandling of merchandise freight, and to render unnecessary the individual billing and accounting which was so expensive. Therefore, bearing in mind the so-called parcel post method of computing rates, a tariff was devised and employed which had for its basis a rate per mile based on a minimum quantity to be loaded in the containers, with changes in the rates based on additional weight, making it to the advantage of the shipper to load the container to as near its maximum as possible, as thereby the resultant weight, reduced back to a cents per hundred pounds basis, would decrease as the weight went up.

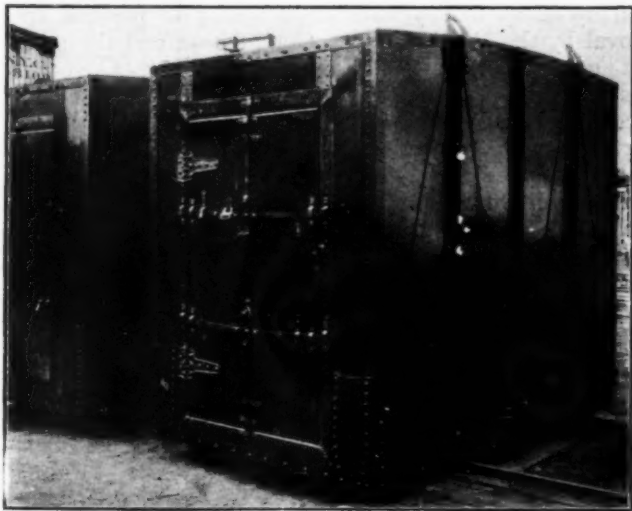
At first glance, this would seem to be throwing away revenue, but in actual experience the reverse is the case.

Studies made by various railroads make it a safe statement that the average railroad loading of l. c. l. merchandise freight handled through freight houses in the usual manner is not in excess of about 15,000 lb. per car and, in so handling, there is an expense of approximately \$1 per ton at each end of the route for labor, together with an attendant expense for billing and accounting.

In a cost study of the handling of l. c. l. merchandise freight, made during the days of the Railroad Administration, taking some 88 representative cities in the eastern section, it was developed that the amounts which must be charged against the handling of l. c. l. merchandise would be on the average of 10.4 cents per 100 lb. at each end of the route.

Therefore, the railroad having the point of origin and destination would be subjected to an expense of 20.8 cents, which must come out of the rate for terminal costs on this l. c. l. merchandise before there could be any chance of profit. With specific railroads, the cost was somewhat higher, but the above figures represent the average.

In addition, in ordinary l. c. l. merchandise handling,



The Container Takes the Place of Crating for Many Commodities

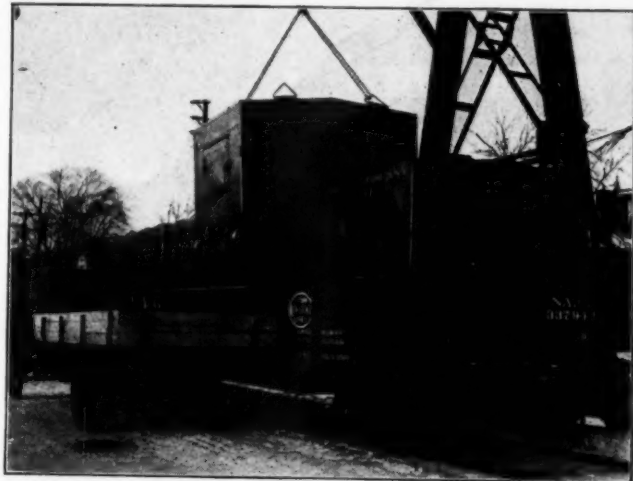
as is quoted in the excerpt from the report of Attorney Examiner Flynn, the claim payments are very high. These claims are due largely to loss through pilferage, and, to some extent, damage.

As will be observed from the illustrations, the claims through loss are absolutely done away with in the L. C. L. container operation, due to the fact that the container cannot be opened while it is on the car, and prior to its

being put on the car, it is either locked or sealed. Therefore, as the container cannot be opened while it is on the car, there can be no pilferage in transportation by the railroad, and if the locks or seals are intact from start to finish, there is positive proof that what is put into the container is there when it is opened.

Experimentation of over five years has also proved that there is practically no damage, as the few claims for damage were due to admittedly improper packing.

The method of handling containers in the case of the individual shipper or consignee is that the container is lifted from the car and placed on a suitable motor truck,



From Car to Truck

as shown in the illustration, trucked to the shipper's place of business and loaded, while on the truck. Loading the container on the truck meets the desires of the average shipper in the larger centers who does not have the means nor the desire to take the container off the truck. Nor is it necessary, for the trucking rate, as worked out (it is in every respect independent of the railroad rate) includes the necessary time for loading or unloading. The container having been loaded at the shipper's place of business, it is locked by the shipper's own lock, if he so elects, or if not, is sealed by the truckman; trucked to the railroad crane, and then lifted on the car; transported to destination. Then the operation is reversed, namely, the container is put on the truck, carted to consignee's place of business, and there opened and unloaded and the empty container either trucked back to the car, or used for outbound loading elsewhere.

In the case of consolidated containers, as used by the freight consolidating companies, these companies have equipped themselves with stations of their own, having facilities for loading containers and switching the cars and containers directly to and from such stations. It will be noted that in both instances labor cost to the railroad is entirely avoided in that the containers are loaded and unloaded by the shipper or consignee.

In the matter of billing, exact figures are not available, but those best posted put the cost of carrying an item of waybilling through the accounts from start to finish at anywhere from 12 cents to 20 cents per item.

In ordinary freight an average of about 200 lb. per item would be perhaps representative. If this be true, on a minimum of 4,000 lb. for one item for the container there would be 20 items in ordinary freight, or a saving of 19 items, and in 7,000 lb., the present tariff maximum, there would be a saving of approximately 40 items, with a very considerable monetary saving.

In addition, bearing in mind the average carloading for l. c. l. merchandise of approximately 15,000 lb.,

with a minimum average of 24,000 lb. for 6 containers loaded at the minimum, or a maximum of 42,000 lb., it will readily be observed that the revenue is much in favor of the container; this, without any calculation as to economies above quoted, namely in billing and in freight house labor.

I am further reliably informed that the average rate per car mile in merchandise freight for less-than-car-



Ready for Delivery to Consignee

load shipments is about 21 cents and, under the present tariffs, as issued by the roads now making use of the L. C. L. merchandise container, with a base rate of 5 cents per mile, it will be observed that the revenue on a minimum set of containers would be 30 cents per mile, working up to a maximum of 39 cents per mile, which is far in excess of the gross revenue on l. c. l. merchandise handled in the ordinary manner, and in no way to be compared with the net, in that the labor and other expenses must be taken out of the 21 cents, where they are not present in the 30 cents or 39 cents per car mile revenue. Among all lines, particularly those serving the larger terminals, the question of terminal facilities is an ever-present subject of discussion, deep thought and careful calculation, for, without a very large expenditure on capital account, it is not possible to increase terminal facilities, and, in many cases, additional facilities are unobtainable at any price.

Therefore, any undertaking, which, in effect, will make it possible to handle increased tonnage in the same terminal, without increasing congestion, but rather decreasing it, and at the same time increase the revenue, would seem an undertaking to be encouraged and utilized by those carriers having vision and taking for their text the net revenue realized by the railroad.

In addition to the present uses of the container, as developed by the L. C. L. Corporation for merchandise handling, the device can be made use of in many other ways, such as in way-freight train service, eliminating the large part of the crew expense; speeding up the service through handling in unit volumes. The container makes it possible for stops to be made at small stations and merchandise delivered at any time of the day or night in locked containers, rather than the ordinary way, at only such time as an agent or other employee may be on duty.

The present type and size of the L. C. L. merchandise container was adopted to meet a condition and it has served and is serving that purpose to a very satisfactory and increasing degree. The basic patents which are owned by the L. C. L. Corporation are broad enough so as to cover other forms of containers, as needed for special purposes, both in the merchandise service and others. These will be reserved for subsequent discussion. Some of the other types of containers, as developed by the L. C. L. Corporation, and covered by its

patents, are the brick container, the lime container, etc.

Broadly speaking, the benefits of the L. C. L. merchandise container may perhaps be summed up as presenting economies and advantages which appeal to the shipper, consignee, and to the railroad, and present the unique feature of making it possible and practical for a railroad to reduce voluntarily the measure of its rates under a new method of transportation, at the same time get more money out of the reduced rates than at the rates commonly in force for handling l. c. l. merchandise.

When this can be done, and part of the profit passed along to the shipping and receiving public through the reduction in rates, it would seem that one of the high purposes of the railroad as a public servant is, to a degree, realized.

The L. C. L. merchandise containers are in no way restricted to any one railroad but are available under proper arrangements for use by any railroads desiring to operate them and, as their usage extends, it seems fair to predict that at least one of the problems in railroad management namely the more efficient method of handling L. C. L. merchandise freight, would be in a fair way to a satisfactory solution.

Reading Highway Operations Authorized

THE Reading Transportation Company, highway subsidiary of the Reading Company, has received a charter from the Commonwealth of Pennsylvania and its incorporators, all officers of the Reading Company, have received permission to operate motor coaches between Pottstown and Barto (11.8 miles) and between Jenkintown and New Hope (26.2 miles).

An application for a charter for this company was made more than two years ago, but approval was withheld by the refusal of the then Governor, Gifford Pinchot, to sign the charter, and subsequently by court action taken by trolley lines endeavoring to prevent approval by the Public Service Commission and the present governor. This court action failing, Governor Fisher approved the application for charter several weeks ago and the Public Service Commission issued certificates of convenience and necessity for the two lines mentioned above on February 17. There are a number of additional applications made by the incorporators which are still pending before the commission and the new company has within the past few weeks applied for authority to operate on several more routes. It is expected that operations will be begun the latter part of April.

* * *



A Union Pacific Coach in Oregon

Motor Transport Division Plans Work at First Meeting

Over a hundred officers of fifty railways and subsidiaries attend sessions at Chicago

THE first meeting of the Motor Transport Division of the American Railway Association, successor to the Railroad Motor Transport Conference, which was held at Chicago on January 25 and 26, was devoted entirely to the setting up of an organization and to an extended discussion of the subjects to which the division will devote its attention. The attendance exceeded the expectations of those in charge. A total of 44 steam railways, practically all of which were Class I carriers, and six electric railways were represented at the meeting. These railways were represented by 98 steam railway officers and 8

general secretary of the American Railway Association, was elected secretary.

As reported in the Motor Transport Section of January 28, the following officers were elected members of the general committee: J. G. Drew, vice-president, Missouri Pacific; H. F. Fritch, passenger traffic manager, Boston & Maine, and president, Boston & Maine Transportation Company; A. Hatton, general superintendent of transportation, Canadian Pacific; C. S. Lake, special assistant to the president, Chesapeake & Ohio; G. W. Lupton, assistant to the operating vice-president Atchison, Topeka & Santa



A. P. Russell



G. C. Woodruff



T. B. Wilson



R. L. Fairbairn

Some of the Officers of the New Division

officers of electric railways. In addition, the meeting was attended by several officers of the American Railway Association, including R. H. Aishton, president, who addressed the division just before its meeting closed.

The meeting of the division was presided over by A. P. Russell, vice-president of the New York, New Haven & Hartford and president of the New England Transportation Company, who had been appointed temporary chairman. Following a short address by Mr. Russell, in which he described the reasons for calling the meeting and sketched the history of its predecessor organization, the Railroad Motor Transport Conference, the election of officers was held, in accordance with the program for the meeting outlined by the general committee. In this election, Mr. Russell was elected chairman of the division; T. B. Wilson, vice-president and manager of the Southern Pacific Motor Transport Company, was elected vice-chairman in charge of the motor coach section; G. C. Woodruff, assistant freight traffic manager of the New York Central, was elected vice-chairman in charge of the motor truck section; R. L. Fairbairn, manager of the passenger service bureau of the Canadian National, was elected vice-chairman in charge of the rail motor car section; and George M. Campbell, assistant to the

Fe; R. K. Stackhouse, general superintendent of stations, transfers and motor service, Pennsylvania; and R. N. Van Doren, vice-president and general counsel, Chicago & North Western.

Discussion of Subjects

No committees were appointed during the first meeting of the division, except that it was decided to reappoint as the law committee the members of the similar committee of the motor transport conference, of which Mr. Van Doren is chairman. It was also decided to appoint a joint committee comprising members of the Motor Transport Division and of the Mechanical Division, which will study the mechanical features of motor transportation equipment. The membership of the various committees under the motor coach, motor truck, and rail motor car sections will be appointed by the vice-chairmen of these sections and the general committee well in advance of the next meeting of the division.

In connection with the discussion of subjects for the Motor Transport Division to study many of the members present expressed their views as to the subjects which are of greatest importance at this time. During the consideration of regulatory developments, some attention was given to the proposed report of the Interstate Commerce Commission examiner on the Com-

mission's motor transport investigation. A considerable interest in developments in air transportation during recent years was also disclosed and it was voted that a recommendation be laid before the American Railway Association, that the association assign the study of the subject of the co-ordination of railway and air transportation to some division. The suggestions made at the meeting as to subjects for the division to study will be considered by the general committee and the vice-chairmen of the various sections of the division in the appointment of committees and the assignment to the committees of their subjects.

Three Meetings Each Year

By vote of the membership it was decided to hold meetings of the Motor Transport Division three times annually, in June, October and February, and the October meeting will be known as the annual meeting. The officers elected at the first meeting at Chicago will hold office until the October meeting of the Division in 1929. In future, officers elected will hold their positions for two years.

The next meeting of the division will be held at Atlantic City, N. J., on January 21-23, at the same time as the first part of the convention of the Mechanical Division. Only accredited representatives of railways will be admitted to the sessions of this meeting on the first two days, but the sessions on the third day, June 23, will be open and a particular effort will be made to secure the attendance and participation in the discussions of as many representatives of manufacturers of motor transport equipment as possible. One of the features of the Atlantic City meeting of the division will be an exhibit of motor transport equipment, including motor coaches, motor trucks, rail motor cars, and similar equipment, to be staged in connection with the exhibit of the Railway Supply Manufacturers' Association.

The following officers of steam railways attended the first meeting of the Motor Transport Division in Chicago:

MEMBERS	REPRESENTATIVES
A. C. & Y. Ann Arbor	J. C. Williams, vice-president. R. V. Oldham, general freight and passenger agent.
A. T. & S. F.	G. W. Lupton, assistant to vice-president S. T. Bledsoe, general counsel M. B. Buckey, assistant general passenger agent M. L. Lyles
A. C. L.	C. J. Chenworth, engineering assistant to vice-president and general manager J. L. Hayes, assistant general freight agent M. F. Steinberger, special engineer F. S. DeVeney, superintendent H. F. Fritch, passenger traffic manager
B. & O. B. & O. C. T. B. & M.	R. J. Littlefield, manager, Boston & Maine Transportation Company H. E. Huntington, general passenger agent W. J. Shenday, general western freight agent D. Crombie, chief of transportation J. H. Gordon, assistant to chief of transportation R. L. Fairbairn, manager, passenger service bureau Geo. N. Goad, superintendent, passenger service bureau A. E. Crilly, chief of wage bureau A. Hatto, general superintendent transportation
B. R. & P.	
C N. R.	
C. P. R.	
C. of Ga.	
C. & O.	
C. & A.	
C. & E. I.	
C. & N. W.	
C. B. & Q.	
C. G. W.	
C. M. St. P. & P.	
C. R. I. & P.	
C. C. C. & St. L.	
D. & H.	
Erie	
G. T. W.	
G. N.	
I. C.	
I. H. B.	
L. V.	
L. I.	
M. C.	
M. St. P. & S. S. M.	
M. P.	
Montour	
N. Y. C. Lines	
N. Y. C. & St. L.	
N. Y., N. H. & H.	
N. P.	
P. R. R.	
T. A. Johnson, electrical engineer	
S. L. Beed, statistician	
C. S. Lake, special assistant to president	
X. H. Cornell, vice-president and general manager Alton Transportation Company	
W. H. Lyford, vice-president and general counsel	
E. S. Stephens, general freight agent	
W. E. Callender, general agent, passenger department	
J. D. Bain, general agent	
R. N. Van Doren, vice-president and general counsel	
George B. Vilas, general manager	
C. A. Cairns, passenger traffic manager	
Allen Gould, assistant freight and passenger traffic manager	
D. H. Hoops, general freight agent	
R. Thomson, assistant general passenger agent	
G. J. Thomas, assistant to president	
T. L. Johnson, assistant to operating vice-president	
W. H. Klinsick, fire prevention engineer	
E. W. Fowler, assistant general manager	
W. S. Cooper, assistant to general manager	
Jos. Caldwell, assistant general passenger agent	
C. H. Ordas, supervisor motor cars	
E. Wanamaker, electrical engineer	
W. J. Leahy, assistant passenger traffic manager	
T. C. Turner, department motor car inspector	
O. B. Munyan, assistant general passenger agent	
L. H. Mussman, general agent	
J. K. McNeillie, superintendent	
Clyde E. Shorey, general attorney	
E. M. Smith, special representative	
C. A. Skog, assistant general freight agent	
D. J. Kerr, assistant to vice-president	
J. F. Porterfield, general superintendent transportation	
C. G. Richmond, superintendent stations and transfers	
Lloyd J. Kiernan, associate editor, Illinois Central Magazine	
E. L. Whitney, assistant to vice-president	
F. Hartenstein, assistant to general manager	
W. P. Eagleston, supervisor motor truck service	
H. L. Margetts, superintendent	
C. M. Winter, assistant to general manager	
J. G. Drew, vice-president	
H. E. Barber, president, Egyptian Transportation Company	
H. E. Sheets, general freight and passenger agent	
G. C. Woodruff, assistant freight traffic manager	
F. W. Flott	
F. J. Herter, engineer rolling stock	
A. P. Russell, vice-president	
H. A. Moulton, special representative	
F. S. Hobbs, general manager New England Transportation Company	
J. H. Brinkerhoff, general agent	
J. E. Cooley, transportation representative	
R. K. Stackhouse, general superintendent stations, transfers and motor service	
H. Z. Maxwell, assistant general solicitor	
O. R. Miller, special agent	

P. R. R., Continued

J. W. Roberts, general superintendent transportation, Eastern Region
 F. W. B. Humes, superintendent stations and transfers, Eastern Division
 J. B. Fisher, general superintendent transportation, Central Region
 T. J. Jelbart, superintendent passenger transportation, Central Region
 J. L. Webb, superintendent stations and transfers, Central Region
 H. C. Higgenbottom, general superintendent transportation, Western Region
 J. D. Fitzgerald, assistant to general superintendent Transportation, Western Region
 E. C. Twells, supervisor stations and transfers, Western Region
 E. M. Christie, supervising agent
 E. F. Kramer, supervising agent
 S. E. McMaster, supervising agent
 J. C. Stewart, supervising agent
 J. L. Wright, supervising agent
 John S. Fleck, chief transportation clerk
 R. S. Foulk, passenger clerk
 B. Ward, Jr., assistant weigh-master
 E. D. Hawley, superintendent transportation
 Wm. D. Duke, general manager
 J. H. Doggrell, superintendent transportation
 T. B. Wilson, vice-president and manager, Southern Pacific Motor Transportation Company
 O. C. Castle, superintendent transportation
 Geo. A. Knapp, special engineer
 G. L. Whipple, general superintendent transportation
 F. D. Copper, general agent, transportation department
 H. E. Watts, passenger traffic manager.

P. M.

R. F. & P.
S. L.-S. F.

S. P.

S. P., Tex. & La. Lines

U. P. System

Wabash.

THE EXECUTIVE COMMITTEE of the American Electric Railway Association, at a meeting in Cincinnati, Ohio, on January 27, approved the budget based on a rate of 60 cents per square foot for all inside exhibition space, and \$2 per lineal foot for all track space, at the annual convention and exhibit to be held at Cleveland, Ohio, September 22-28. The executive committee also approved the setting aside of one day during the convention to be devoted exclusively to inspections of exhibits, without the scheduling of meetings of any kind.

* * *



A Federal Truck in Service on Blue Line Transfer, a B. & O. Subsidiary

Motor Transport News

JURISDICTION over the operation of motor coach and truck lines operating as common carriers in Georgia has been assumed by the Public Service Commission of that state. An order was issued requiring all such operators to file schedules, tariffs and ownership statements by February 21.

A PRESS REPORT to the effect that the Central of New Jersey had abandoned motor coach service on the Lakewood-Barnegat, N. J., route is without foundation. The Sunday service has been curtailed, but the week-day service remains unchanged.

Frank W. Matson, junior member of the Minnesota Railroad & Warehouse Commission, has been placed in charge of the railway, motor coach and motor truck division of the commission, succeeding Ivan Bowen, who has resigned from the commission.

NEWSPAPER REPORTS from Mobile, Ala., that the Louisville & Nashville has applied to the Alabama Public Service Commission for permission to operate a motor coach line between Mobile and Biloxi, Miss., are denied by W. R. Cole, president of the railway.

B. & M. Extends Service Into New York State

The Public Service Commission of New York on February 17 consented to the assignment by James Barton to the Boston & Maine Transportation Company of a certificate granted to Barton covering operation of a motor coach line between Hoosick Falls, N. Y., and the New York-Vermont state line.

The Boston & Maine will continue the fares now charged by Barton and will give better service and provide better equipment.

Motor Transport Division to Meet in Atlantic City

The Motor Transport Division of the American Railway Association will hold its next meeting in Atlantic City on June 21-23. The session will be held in the Rose room at the Hotel Traymore. The first two days of the meeting will be devoted to executive sessions at which the railroad delegates only will be admitted. On the third day, however, the automotive manufacturers and the interested public generally will be invited to be present.

New Haven Operating 241 Motor Coaches

The New England Transportation Company, subsidiary of the New York, New Haven & Hartford, is now operating 241 motor coaches over 1,626 miles of routes. These routes extend over 1,345 miles of highway. A total of 50 motor coach lines are operated, including 21 which replace railway lines, 36 which supplement railway service and 6 which are summer lines.

During 1927, the New England Transportation Company carried 4,248,287 passengers and operated 6,682,355 motor coach miles. It now has 405 Employees.

Insull Lines Change Hands

The Insull interests of Chicago, which own the Chicago, North Shore & Milwaukee, the Chicago, South Shore & South Bend, and the Chicago, Aurora & Elgin, in addition to a number of subsidiary motor coach companies supplementing and feeding the rail lines, have sold to the Motor Transit Management Company two of the motor coach subsidiaries, the Southwestern Michigan Motor Coach Company and the Northern Illinois Service Company. The two transferred companies have been operating the lines from Chicago to Davenport, Ia., and to Detroit, Mich., and Muskegon, as well as a number of local lines in northern Illinois and southwestern Michigan. The Insull interests retain the motor coach lines operated by the North Shore, the South Shore and the Aurora & Elgin railway companies which supplement the train service.

The Motor Transit Management Company now controls a total of 4,374 miles of motor coach routes. Its lines radiate from Chicago to Milwaukee, Wis., Madison, Dubuque, Ia., Davenport, Rockford, Ill., St. Louis, Mo., Indianapolis, Ind., Detroit and Muskegon.

N. E. T. Buys Out Independent

The New England Transportation Company has purchased the certificates of convenience and necessity held by the Hartford & Springfield Coach Company, permitting the operation of a motor coach line between Hartford and Springfield. It has also taken over the coach company's terminals in Hartford and Springfield and has acquired its equipment. The transfer was carried out on February 8.

The New England Transportation Company at present operates express service between Hartford and Springfield on both sides of the Connecticut river. According to press reports its annual gross revenues on these lines have been \$100,000, while the Hartford & Springfield Coach Company's gross revenues have been about \$300,000. The route is 85 miles long, 69 miles being in Connecticut and 16 miles in Massachusetts.

New York Coach Operators Must Describe Equipment to Commission

All motor coach operators, in New York, before putting equipment into service must submit to the commission a statement showing the type of the motor coach, the type of the heating equipment, the kind of motive power, and the kind of brake equipment, according to an order issued by the New York Public Service Commission. This order is intended to insure the safety of passengers in motor coaches operated under certificates of convenience and necessity issued by the commission.

"Where a motor coach operator procures and operates a motor coach which has been in use before," says a statement of the commission, "the commission requires that it be notified of the mileage to date, the physical condition of the coaches and other information which may be pertinent as affecting safety in operation. The commission holds that public safety requires that it be furnished this information by motor coach operators so that it can be informed generally as to the condition of equipment on motor coach lines."

Los Angeles & Salt Lake Proposes New Coach and Truck Line

The Utah Parks Company, the subsidiary of the Los Angeles & Salt Lake, which operates an extensive tourist motor coach service in southern Utah and northern Arizona, has applied to the Utah Public Utilities Commission for permission to operate motor coaches and trucks for the transportation of passengers, freight and express between Cedar City, Utah, and St. George, a distance of approximately 50 miles. Cedar City is the headquarters of the tourists operations of the Utah Parks Company. A hearing on the railway application was held on February 14, at which time the commission also held further hearings on the applications of the Great Western Motorways and of the Pickwick Stages for permission to carry passengers between Salt Lake City and St. George in interstate commerce. These two companies are now operating motor coach lines between Salt Lake City and Los Angeles, Cal., handling interstate passengers only.

The Utah Parks Company is opposed to the granting of the applications of the other two companies. In its application for the Cedar City-St. George certificate it set forth its qualifications for operating such a line, specifying the large sums of money which have been and are being spent by the Los Angeles & Salt Lake in promoting tourist travel to the parks of southern Utah. The application also shows that the Utah Parks Company has ample equipment, including both motor coaches and trucks, with which to carry on the proposed operation.

Among the Manufacturers

Jesse T. Hiller, publicity director in the general bus department of the Mack-International Motor Truck Corporation, New York, has resigned to become news editor of Bus Transportation.

Joseph D. Leimert, Chicago representative of the Triplex Safety Glass Company of North America, announces a change in the name of the Triplex distributors from the

B-K Brake Corporation to the Hoyt Distributing Corporation. The address remains the same, 844 Rush street, Chicago.

John D. Hertz, chairman of the board of directors of the Yellow Truck & Coach Manufacturing Company, Chicago, resigned at a meeting of the board of directors in New York on February 10. John A. Ritchie, vice-chairman of the board was elected chairman in place of Mr. Hertz. The directors voted to omit the quarterly dividend on the cumulative preferred stock due on April 2.

Orders for Equipment

THE NEW ENGLAND TRANSPORTATION COMPANY, subsidiary of the New York, New Haven & Hartford, has accepted delivery of nine Yellow coaches of the semi-deluxe type manufactured by the Yellow Truck & Coach Manufacturing Company, Chicago. These coaches will be used on the Connecticut lines of the New England Transportation Company.

THE NORTHLAND TRANSPORTATION COMPANY has ordered six 34-passenger "cross-country" type motor coaches from the Will Motors Corporation, Minneapolis, Minn., and six model-Y chassis from the Yellow Truck & Coach Manufacturing Company, Chicago. The bodies for the latter coaches will be furnished by Ecklund Bros., Minneapolis.

What's the Matter With "Stage"?

The *Motor Transport Section* of the *Railway Age* which is devoted, according to its masthead, to the "co-ordination of railway and highway service" has opened an interesting discussion as to the most appropriate name to be adopted for commercial highway vehicles.

The magazine in question would like to abandon use of the word "motor bus" and looks with favor on "motor coach" instead.

It seems that the word "stage," which has honorable and romantic traditions attached to it in the West, does not have much currency in the eastern parts of the country.

"Bus," as is doubtless generally known, is a corruption of the Latin word "omnibus"—meaning a carry-all. We get it from England and the inheritance carries with it a suggestion of the lumbering, rather clumsy vehicles that were characteristic of the London streets and English roads in other days.

"Coach" is somewhat more "elegant" but it suggests the vehicle of the tally-ho days rather than the modern, up-to-date conveyances that now ply our highways.

The word "stage" cannot be confused with anything else than exactly what it designates—a highway conveyance, especially that running between towns.

"Bus" may be all right for the heavy city type of motor vehicle that is replacing the trolley, and "coach" may do well enough for the more elaborate deluxe conveyances. But the word "stage" will probably stay in use throughout the West no matter what term may be adopted elsewhere.

In the western states the stage not only has a distinguished ancestry but the motor stages of today are in a great many cases the direct successors to and follow the very routes of the horse drawn stages that contributed such picturesque chapters to earlier western history.

Another consideration:—The word "motor stage" or "auto stage" is well established in California. And California is the leading state in the development of motor staging—not only in the volume of travel, but in excellence of equipment.

If it were left to California stage operators to decide, their vote would doubtless be unanimous in favor of adopting the word "stage" for general usage. And why should not the preference of the leading state in the industry be a deciding factor in the discussion?

The word "stage" should be adopted for national usage.—From *The Motor Carrier*, San Francisco, Cal.